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# East Europe Report

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22 AUGUST 1986

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AGRICULTURE

GERMAN DEMOCRATIC REPUBLIC

## GRAIN HARVEST STRATEGY ADAPTED TO RAINY WEATHER CONDITIONS

Moscow/East Berlin INTERNATIONALE ZEITSCHRIFT DER LANDWIRTSCHAFT in German  
No 3, 1986 pp 223-5

[Article by Dr Klaus Algenstaedt, Director, and Dr Peter Feiffer, scientific staff member at the Research Center for Mechanization in Agriculture at the Academy of Agricultural Sciences in Schlieben/Bornim; Dr Dietmar Krumbiegel of the Meteorological Service of the GDR; Agriculturalist Achim Methfessel, head of the Grain Production Department; Andrea Feiffer, Engineer for Research and Development at the Plant Production LPG in Andisleben: "Proper Grain Harvest Strategy Even Under Difficult Harvest Conditions"]

[Text] Together with the Memleben VEG, the Andisleben LPG and other colleagues in the GDR, a working paper has been prepared by the Schlieben/Bornim Research Center for Mechanization concerning the harvesting of grain under difficult conditions. Its most significant points are given below.

### The Influence of Weather on Harvesting and Fuel Usage During the Harvest

With intelligent planning, chances are very good that better use can be made of the sun's energy, thus saving diesel fuel and in particular the energy resources required for drying.

The most important considerations include crop characteristics, field selection, harvesting sequence, harvesting in stages, and above all getting the greatest possible use out of the combines during the most favorable daylight hours.

The following can be said concerning the relationship between weather in the GDR and harvesting. Based on a harvest season of 35 days, up to 12 days in a "normal year" can be called unfavorable to very unfavorable, 11 normal, and 6 favorable or very favorable. Therefore, in a "normal year" the harvest must be concluded within about 18 working days.

Analyses of agrarian meteorology have shown that during a 10-year period an average of four unfavorable to very unfavorable harvest seasons can be expected. Favorable harvest years in the GDR were 1976, 1982 and 1983.

During normal years in the GDR the following number of hours per favorable harvest day can be expected in which the relative humidity will be below 70% (Table 1).

Table 1 Hours per Day During Favorable Harvest Season in which Humidity is Below 70%

<u>Date</u>	<u>Northern Lowlands</u>	<u>Other Lowlands</u>	<u>Highlands</u>
10 July	10.0	12.5	10.0
20 July	10.0	12.0	11.0
31 July	9.5	12.0	11.0
10 Aug.	9.0	12.0	11.0
20 Aug.	7.0	11.0	9.5

A very important conclusion can be drawn from this table. While 10 hours per day are available for harvesting between 10 and 20 July in the northern lowlands, after August 20 it is only seven hours per day. In this case a late harvest therefore means a 30% decrease in the harvest time available each day.

#### Available Threshing Time Under Varying Weather Conditions

There are relatively few "normal years" in terms of the grain harvest. Of particular interest are what conditions prevail during unfavorable weather. The available working time in hours per harvest season is shown in Table 2.

Table 2 Available Threshing Time During the Grain Harvest

<u>Harvest Conditions</u>	<u>Northern Lowlands</u>	<u>Other Lowlands</u>	<u>Highlands</u>
Good	180 to 210	275 to 300	220 to 240
Unfavorable	90 to 125	165 to 190	135 to 160
Very unfavorable	54 to 81	132 to 156	83 to 126

In evaluating this information, however, it must be kept in mind that the favorable meteorological conditions for threshing are unevenly distributed throughout the harvest season. Therefore, in conjunction with the degree of ripening specific to different grain types, species, areas and fields, the result is complicated interrelationships and an increase or decrease in the available harvest time. In summary it can be said that the plant cultivation enterprises in the GDR must gear themselves to bring in the harvest within 145 hours if possible in order to accomplish it with low losses, in dry condition and of acceptable quality even under unfavorable conditions. This is a very ambitious goal which can be realized if all of the enterprises achieve the top harvest statistics of the leading plant cultivation enterprises.

Under very unfavorable conditions only about 100 hours of good weather are available. Harvesting must then continue even under elevated moisture conditions, taking into account all the suggested appropriate measures. The decision to harvest must be made based above all on any possible losses (bent-over heads, premature sprouting, shedding, etc.). The decision in each case must always be made by the plant cultivation enterprise.

## Weather and Moisture Level

Dew and rain cause grain fields to take on substantial amounts of contact moisture. Two stands of grain with the same yield (summer barley, 60 dt/ha) were used in order to investigate this problem. The stand designated A has longer stalks and a greater number of stalks than the stand designated B (Table 3).

Table 3 Contact Moisture in Stands of Grain as a Result of Dew or Rain (l/ha)

<u>Cause</u>	<u>Stand</u>	<u>Increase in grain moisture</u>	<u>Increase in straw moisture</u>	<u>Contact moisture</u>	<u>Total</u>
Light dew	A	100	100	1500	1700
	B	100	100	1000	1200
Heavy dew	A	150	150	6000	6300
	B	150	150	4000	4300
1 hour of rain	A	150	150	2000	2300
	B	150	150	1200	1500
4 hours of rain	A	300	300	6000	6600
	B	300	300	4000	4600
8 hours of rain	A	450	350	10,000	10,800
	B	450	350	6600	7300

An interpretation of these figures shows that light dew produces nearly as much water in the crop as one hour of rain; heavy dew corresponds to the amount of contact moisture produced by four hours of rain. The importance of dry nights to the harvest is apparent. A "harvest strategy" for the consumption of energy resources during the drying process can also be derived from the table.

An example follows:

There has been uninterrupted rain for 8 hours from 4:00 a.m. until 12 noon. A dense stand contains over 100,000 liters of water per hectare. As of 1:00 p.m. the sun comes out. This produces radiant energy of about 90 joule per cm<sup>2</sup> per hour. The radiant energy falling on one hectare is nine milliard (nine billion) joule, about 20 percent of which is lost through reflection. To evaporate one liter of water requires 2.5 million joule. Over three hours pass before the contact moisture has dried off. Only then does the actual drying of the grain itself begin, and this requires an additional three to four hours at high air temperatures (more if the air temperature is low). If little or no dew falls, harvesting can begin toward evening. However, if harvesting were to begin only two to three hours after the rain, the high grain moisture content would have to be dried artificially.

Within a stand of grain, heat radiates and drying progresses from the top down in varying intensity. One meteorological parameter for energy absorption is global radiation (the sum of direct solar radiation and diffuse celestial radiation). In the middle lowlands of the GDR this sum reaches the values given in Table 4.

Table 4 Energy Transfer and Drying Time in Different Levels of a Stand of Grain

Height of stand in cm	Global Radiation		Contact Moisture in mm	Drying Time in hours
	percent	J/cm <sup>2</sup>		
101 to 120	25	23	0.10	1.1
81 to 100	20	19	0.10	1.3
61 to 80	15	14	0.10	1.8
41 to 60	10	9	0.11	3.0
21 to 40	5	5	0.11	5.6
0 to 20	5	5	0.11	5.6

In very thick stands the drying time is even longer, especially in the lower layers. In addition, in deciding whether or not to harvest, it must be kept in mind that the lower section of the stalk can release water when threshed. This water condenses on the cold metal components and is absorbed to a substantial extent by the grain. This is referred to as "moisture transfer" from the straw to the grain. Whenever the grain moisture content increases by more than one percent during threshing, this phenomenon must be taken into account, and if necessary longer stubble must be left. The following conclusions can be used to summarize the influence of weather conditions on the grain harvest:

- We recommend that all decisions on whether or not to harvest be based first of all on the risk of premature harvest or post-harvest losses. If winter barley, for example, already shows evidence of bent-over heads when ripening is just beginning, the harvest must proceed very quickly even if the grain must be dried subsequently.
- If there is no clear risk of premature harvest losses, the prime consideration in making the decision is above all combine performance. Ripeness and moisture conditions which promise the highest performance level are to be given priority. This also means the lowest possible diesel fuel consumption during the harvest.
- If the conditions are present for optimum performance with low overall losses (this also means the highest possible quality), then the lowest amount of subsequent artificial drying of the grain is the crucial deciding factor.

#### Technology

The term "bad weather harvest" is commonly used but, on closer examination, incorrect. This expression leads to the absolutely false view that during years of unfavorable weather conditions, mostly grain with excessive moisture or even only wet grain is harvested. We think that having the technical means to manage a difficult harvest is very important. Crop lifters, spare tires,



etc., must stand ready. There are, however--and this has been shown by the process optimization evaluations of over 200 plant cultivation enterprises over several years--always several dry days or dry hours during the day within the harvest period even under unfavorable meteorological conditions. An attempt must be made to complete the major portion of the harvest during these times.

Only when one or more grain conditions (bent-over heads, shedding, premature sprouting) occur during unfavorable harvest weather, producing a direct risk of loss, must threshing continue even in the presence of excessive moisture.

In terms of the "harvest strategy," an essential element of process optimization is allowable loss, which must not be set too high however. Allowable loss, in terms of excessive moisture and risk to the crop, must be high enough to permit the harvest to continue without too much delay.

Disadvantages are:

- clogging of sieves and strawwalkers, and grain spillover
- increased machine wear leading to later breakdowns, high maintenance costs and increased need for spare parts

Even when harvesting must continue under excessive moisture conditions, the attempt must be made to achieve acceptable levels of threshing losses and mechanical wear. Of primary importance is to check all machine parameters and to continuously repair and maintain the machinery during nighttime inspections, for example.

When dry weather reappears following unfavorable weather conditions, all machines must be employed such that the maximum possible performance level is achieved. Therefore, great care must be taken to ensure that no mechanical damage occurs when harvesting excessively wet grain. As the stand gets drier the allowable losses are increased to the highest possible level. At first glance this recommendation may appear contradictory. Low to average allowable losses under unfavorable weather conditions--this decision is easily justified because, as of a certain allowable loss figure, the combine reaches the clog threshold for wet grain and thus enters the danger zone in terms of damage and grain loss.

The drier the grain is on the other hand, the greater the demand for performance based on the increasing allowable loss. There is also an additional advantage: Dry grain is rather easily shattered by the threshing mechanism, particularly when it has become brittle and overripe following a longer rainy period. A thick layer of straw (a well-filled machine) protects the grain and reduces losses due to cracked and broken grain. Therefore, two very important factors are involved in harvesting under unfavorable conditions:

- All process optimization measures must be employed to ensure that the share of productive time with respect to the overall time involved reaches a maximum during the hours and days of good weather; at least 75 percent must be assured even in difficult harvest situations.

- The performance capability of the combine must be exploited to the maximum. The capacity of an E 516 must be at least 9 metric tons per hour and an E 512 must bring in at least 4.5 metric tons per hour. Here, too, all elements of process optimization must work together (allowable loss, performance-related adjustments, catch-up harvesting, etc.).

If these two criteria are employed in all plant cultivation enterprises, then unfavorable weather conditions should not in general lead to excessive losses. Overall losses will be between 8 and 12 percent. In normal or favorable years they decrease to less than five percent. In summary, it can be said that unfavorable weather conditions do not always mean that additional equipment and measures will be required for threshing wet grain, but rather that maximum use of machine time and capacity is needed during the few favorable hours which exist.

### Basic Technological Requirements

In threshing excessively moist or even wet grain, the machine is very sensitive to any maladjustment and its performance decreases. Losses increase and damage occurs. Therefore, in accordance with the harvest difficulties involved, the combine is to be set with a high drum rotation speed, with the concave at medium, with the sieves at wide open and with the air blast set higher.

Full engine speed is also needed for precise adjustment because otherwise all of the combine components rigidly connected to the engine would run at too slow a speed.

The machines are to be checked each day for maladjustments. Under heavy loading conditions, automatic controls should be kept in mind. The fan speed is to be calibrated with a hand tachometer. The fan must also be checked for dirt deposits to ensure that no imbalances occur in the threshing drum. Deposits of dirt on strawwalkers and sieves prevent the grain from going through. If the height of the stand is even, the header can be set higher in order to prevent moisture transfer from the straw to the grain.

With lodged grain, the header reel should be set forward as far as possible. As it engages, its tines should lift the grain slightly just ahead of the blade. Dual tires should be mounted for difficult ground conditions. It is often sufficient to equip one or several combines with them to harvest the unfavorable locations, e.g. in sunken areas or along rivers.

The test for premature sprouting is absolutely essential. In this test the darkened heads of the stands in question are rubbed to separate the grains which are then inspected with the aid of a magnifying glass. If the sprout comes to a point, there is only a few days time in which the endangered stands can be harvested with minimum damage. Losses from the strawwalker and the cleaning section must be checked separately when threshing excessively moist grain in order to be able to make the proper adjustments if losses should increase. Due to the demands placed on the combine, the effect on grain quality and the amount of energy required for drying, however, all these measures for threshing excessively moist grain should always be used only as a last resort.

## Summary

Under difficult harvest conditions, i.e. during unfavorable weather, all efforts involved in the harvesting of grain should be directed toward achieving the highest possible level of performance from the machines during the few favorable hours and days available by efficiently employing all elements of process optimization. This produces the greatest economic benefit in terms of lowering losses, as well as in terms of saving maintenance costs, fuel and time. Only when these measures are not sufficient should harvesting take place under unfavorable weather conditions, taking into account all the basic rules for threshing under excessive moisture conditions. It is absolutely essential that the machines are available and in top condition during the following good weather period.

12552

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ECONOMY

ALBANIA

TECHNOLOGICAL SHORTCOMINGS REDUCE PRODUCTION RESULTS

Tirana ZERI I POPULLIT in Albanian 9 Apr 86 p 3

[Article by Ramadan Garo, deputy chairman of the Committee for Science and Technology: "Technological Improvements are Necessary for an Increase in the Effectiveness of Production"]

[Text] The criticism made by the 14th plenum of the party Central Committee with regard to the level of technology, which, in many cases, is still low and which does not respond to the needs of the development of various sectors of the economy, is serving as a general stimulus in all the scientific organisms of the ministries, including the schools of higher education and the Committee for Science and Technology, which has the task of stimulating the implementation of the most advanced techniques and technology.

Analyses that have been made indicate that not only projects constructed long ago, but also those which we build today, continue, in many cases, to be designed on the basis of relatively backward existing technology. This occurs in the area of enrichment of minerals, in some projects of the food industry, etc., where not only have the projects been costly, but also the recovery of profitable components and the labor productivity and efficiency have been low. In agriculture and animal husbandry, while new technology has found better application in the plains zone, it is less widespread in the hilly and mountainous zone, particularly with regard to vegetables, fodders, fruit trees, corn, small livestock and pasturage. There has also been much less concrete assistance to this zone from the scientific organisms of the country. In most mines, technology and mineral utilization are, in general, correctly determined, but in terms of defects in technical readiness and shortcomings in the application of technical discipline, the indices of impoverishment losses are higher than the actual possibilities. In copper mines, despite use of the same technology, this has caused impoverishment losses to vary within wide limits from one mine to another. This situation is permitted by the respective ministry beginning with the planning stage, instead of finding a way of resolving the problem.

Similarly, in copper enrichment plants, not only has the technology which is used been designed in an antiquated manner, but also the quality of production of equipment and machinery by the machine industry is poor. The same can also be said of the animal husbandry complexes, where the technology of

of livestock management is generally advanced, while techniques of feeding and the application of the technological process for norms of feeding, as well as treatment and utilization of manure for agriculture, are more backward. There are also shortcomings in the level of application of technology in vegetable greenhouses, etc.

All the aforementioned defects and shortcomings lead to perceptible losses for the economy, since major investments have been made. Furthermore, the necessary attitudes for changing the situation do not exist. Thus, for example, the Institute of Metallurgy must accelerate work to improve the technology for certain articles, which, with little expenditure, yield much revenue, as well as to improve the technology of non-ferrous metallurgy to increase recovery. It is necessary for scientific organisms to concern themselves more and in a better way with problems of the area of priority intensification and the hilly and mountainous zone, as well as particularly with problems of economic effectiveness in general where there is more backwardness. So far, these organisms have not proceeded properly with regard to problems which appear today and with regard to the future, despite special tasks which have been assigned for these purposes. It is especially necessary to activate organisms specializing in economic thought, such as the Economic Institute and the two faculties of the school of higher education, but economic thought must be introduced rapidly into every scientific study and organism, rather than at the very slow rate at which it is proceeding in this area. On the other hand, extensive agricultural production and the tasks of intensification dictate the urgent need for expansion and extension of coordination of work among various scientific organisms, such as animal husbandry, veterinary science, fodder study, soil study, etc., in order to resolve problems as completely and efficiently as possible.

It is necessary for the ministries, according to the areas they cover, and the Committee for Science and Technology to lose no time, but to involve all the scientific organisms in a better way with these problems, coordinating work more effectively with the Academy of Sciences and the school of higher education as well. Attention is required not only in regard to the equipment and machinery which we continue to import, so that we can reconcile their technical and technological indices with the sources of energy and raw materials our country possesses.

The major element in designs based on out-moded technology is the low level of knowledge and application. This requires a raising of the level of training of cadres in scientific organisms, as well as in the technological bureaus and agricultural stations of districts, where the level of work and training of cadres leaves something to be desired. Good work is being done by the technological bureau of the Chemical and Metallurgical Combine of Lac and by that of the Mborje Drenova Mine, which have scheduled and carried out effective studies for the economy. Shortcomings still exist in the links and in the methodical scientific guidance and assistance even in the planning stage of scientific activities by the institutes for these grassroots scientific organisms.

The increase in the level of scientific information on the type and level of technology, where the institutes bear the burden, has an influence on the usefulness of this work. This leads to a more competent resolution of technological and technical matters in accordance with our conditions, with our minerals and with the requirements and conditions of our agriculture.

12249/9835

CSO: 2100/46

ECONOMY

ALBANIA

#### CAUSES OF LOSSES IN COPPER INDUSTRY EXAMINED

Tirana ZERI I POPULLIT in Albanian 27 May 86 p 2

[Article by Ilia Telo, Institute of Economic Studies: "Losses Hidden Behind the Nonfulfillment of Recovery Plans"]

[Text] What some calculations of losses of copper as a result of the nonfulfillment of recovery plans reveal. The figures are increasing, but they are still below possibilities.

The increase of economic effectiveness in the copper industry is closely connected with the reduction of technological losses and hence with the increase of copper extraction in enrichment and in metallurgy. At the plenum of the party committee Mirdite District, Comrade Ramiz Alia emphasized that; "Persistent work must be carried out to improve the coefficient of recovery in enrichment plants and foundries, because we have considerable losses of metal." The execution of this instruction, which was re-emphasized again at the 14th plenum of the party Central Committee, is very important for Mirdite District since Mirdite is one of the major centers in our country for the extraction and processing of copper. In addition to the many mines in this district, there are three copper enrichment plants, as well as a copper foundry and refinery in Rubik. But what is the actual state of affairs?

At the copper enrichment plant in Reps, which is the largest plant of this type in our country, the production plan for concentrated copper was not fulfilled last year by 4548 tons. Analyzing the factors involved in this short fall, it appears that of this short fall 1,300 tons were not produced due to non-realization of the planned coefficient for extraction of copper in enrichment. There are various reasons for the excessive technological losses in this plant. They are connected with violations of technical and technological discipline in production, as well as with flaws in the organization and management of the work of the enterprise and of other higher organs. This year, however, there is some improvement in comparison with last year; nevertheless, the tasks of the plan and the coefficient of recovery are not being fulfilled. Thus, in the first four months of this year alone, dozens of tons of copper concentrate have been lost due to excessive technological losses.

Two copper enrichment plants, those of Kurbnesh and Rreshen, depend upon the copper enterprise of Kurbnesh. The former is the oldest plant of this type in our country, while the latter began production last year. In the plant at Kurbnesh, both last year and this year, the planned coefficient of copper extraction in enrichment has been exceeded. But what is the situation in the plant at Rreshen? We recall that last year, the situation in this plant was grave. Nonfulfillment of the planned coefficient of recovery caused a loss of 102 tons of copper concentrate. It is true that during 1985, this plant overfulfilled the plan for production of copper concentrate, but this occurred as a result of overfulfillment in the processing of the mineral. Reflecting better on the flaws and defects, in the spirit of the tasks assigned, a change is now being made in the direction of the coefficient of recovery and this important index is being exceeded.

The experience of the two copper enrichment plants of the Kurbnesh mine indicates that when the engineering and technical personnel and the workers in general mobilize their forces and their scientific and creative thought, and when they strengthen discipline and control, results increase. The reserves and the possibilities exist.

Two years ago, in the metallurgical plant at Rubik, the planned coefficient of copper extraction in metallurgy was 86 percent and only 79.55 percent was realized, while a considerable quantity of blister-copper was lost. This grave situation was analyzed and tasks were determined. Last year, although the plan was not fulfilled, a recovery of about 5 percent higher was achieved. There are improvements this year as well, but the planned recovery has still not been achieved. The reasons for this situation are connected with a lack of secure reserves of raw materials, with flaws in the smooth functioning of supply, etc. As a result of this, it is not possible to make an optimum mixture of raw materials beforehand. This means that on account of a deficiency in the organization and coordination of work between the mines and the transport, losses in blister-copper are permitted, for which the role of the sections in the executive committee must also feel greater concern.

The 14th plenum of the Central Committee of the AWP strongly emphasized the need for an increase in the effectiveness of work in the copper industry and, particularly, for a reduction in technological losses in flotation and smelting. The experience of this year in the plant of the Kurbnesh mine and in the Rubik factory indicates that possibilities exist for technological losses not to exceed the level of the plan. The engineering and technical personnel, as well as all the workers and the higher organs, must concern themselves seriously with improvement of the plan indices. We say this because of the fact that we consider that the planned technological losses for this year in the Kurbnesh plant - 22 percent, in the Rreshen plant - 19 percent, and in the metallurgical plant at Rubik - 14 percent - are high.

12249/9835  
CSO: 2100/45



ECONOMY

BULGARIA

FIRST HALF 1986 PLAN FULFILLMENT REPORT

AU291731 Sofia RABOTNICHESKO DELO in Bulgarian 25 Jul 86 pp 1, 2

["Report of the Central Statistical Administration Under the Council of Ministers on the Fulfillment of the Uniform Plan for the Country's Socio-economic Development During the First Half of 1986"]

[Text] As a result of the nationwide upsurge in honor of the 13th BCP Congress and the increased labor activity of the economic trusts and the enterprises in order to implement the congress decisions, the Uniform Plan for the Country's Socioeconomic Development was fulfilled during the first half of 1986 in all basic indices. The counterplan was overfulfilled by 6.1 percent for net production, by 10.7 percent for gross profit, and by 8.1 percent for social labor productivity.

Compared with the first half of 1985, increases were achieved in the non-agricultural enterprises of 7.1 percent in production, 4.4 percent in profitability, and 2.4 percent in fund yield, and the population's requirements for goods and services were fully satisfied. The retail goods turnover increased by 9.6 percent at current prices compared with the first half of 1985. The country's foreign economic relations continued to develop.

The positive results achieved in the development of the economy are related to a considerable extent to the successful introduction of scientific and technical developments into practice and to the raising of the technical and technological standard of production.

Some 2,915 scientific-technical developments were introduced into the national economy, while the counterplan for the potential economic effect was overfulfilled by 16.3 percent for the half year.

Important tasks were fulfilled in the introduction of state-commissioned scientific-technical advances: a technology for the preparation of ferro-varnish and polyester film disc-casting, automatic technological modules and a technology for producing parts based on the SE 063 machine tool, a technology for production of wave reducers [reduktori], and a technology for production of joinery from polyvinyl chloride, as well as a number of other technologies of importance for the national economy.

In industry new equipment for the automation of production was brought into service: 256 numerical-program controlled metalcutting machines, 63 automated process lines, and 122 automatic technological modules. The successful introduction of automated systems for production and control continued; during the 6 months 91 automated control systems for technological processes and 22 automated systems for operator control of production were commissioned. The number of sections, shops, and types of production with integrated mechanization and automation in service rose by 91.

The technological-economic ratings of 54 groups of products were also increased, such as motor-powered high-lift trucks, automatic electric washing machines, pneumatic lift trucks and vehicles, steel pipes, woolen yarns, fabrics for sportswear, and so on.

In industrial construction the application of modular and large-module installation of steel roof structures and process equipment continued to expand, as well as the application of new technologies for the assembly of large-dimensioned and one-off structures, for carrying out the installation operations by preassembly [komplektatsiya], and so on.

In agriculture a successful start was made on the introduction of new technologies and new machines for cultivating green peas and green beans in a number of regions of the country. Work is expanding in the production of virus-free planting material by tissue culture methods and in embryo implantation in cow-breeding.

In transportation the building of the integrated system for automatic rail traffic control on the Sofia-Plovdiv line continued, and four route-relay interlocking systems [marshrutno-releyni tsentralizatsii] were constructed, two of which are in regular operation. Some nine ship stations in the INMARSAT satellite system were installed, as against the six planned for the year.

Work is successfully going ahead on the introduction of the automated system for controlling international road freight traffic and the automated system for intraokrug road freight traffic, with five new truck combines.

During the half year work was also carried out on certain other tasks, such as train control radio links, the automated system for registering railcars by their numbers at the L.I. Brezhnev Construction and Installation Combine, the automated control of air traffic at the radar complexes in Sofia, Varna, and Burgas, and so on.

#### Industry

The economic trusts and enterprises in industry overfulfilled the plan for the manufacture and disposal of industrial production.

The volume of manufactured goods production rose by 6.0 percent compared with the first half of last year. The value of manufactured industrial goods produced--21,086 million leva--is 1,194 million leva higher than that for the same period of 1985.

## Output of Industrial Goods Production

First half of 1986  
as percentage of  
first half of 1985

### Branches

Electric and Thermal Power Production	94.2
Coal Industry	107.0
Ferrous Metallurgy	103.4
Machine Building	113.2
Chemical and Oil-Refining Industry	108.7
Construction Materials Industry	113.2
Timber-Production and Woodworking Industry	101.7
Pulp and Paper Industry	100.4
Glass and China-and-Pottery Industry	101.2
Textile Industry	103.2
Clothing Industry	103.5
Leather, Fur, and Footwear Industry	105.6
Printing Industry	101.3
Food and Tobacco Industry	101.5
Local and Cooperative Industry	106.9
Other Branches of Industry	108.3

Fast rates of growth in production were achieved by such economic trusts as the Priborostroenie i Avtomatizatsiya Economic Trust (ET), Izot ET, Metalloobrabotvashti Mashini i Roboti ET, the Khidravlika Combine, Tekhnologiya na Metalite ET, Biotekhnika ET, Novi Tekhnologii i Materiali (TEKHNOMAT), Farmakhim ET, Stroitelni Materiali ET, etc. In certain economic trusts, such as the Stroitelstvo ET, Khimicheskaya Promishlennost ET, Rodopa ET, Pamukoteks ET, Ruen ET, and others, the plan fulfillment results do not meet the requirements. Furthermore, the quality of certain manufactured products is not the required level.

Across the okrugs, the highest growths in production were achieved in Pleven, Tolbukhin, Stara Zagora, Sofia, Yambol, Lovech, Sliven, Razgrad, Pazardzhik, and Vratsa Okrugs.

Compared with the first 6 months of 1985, the production of a number of basic industrial products increased. Normal supplies of electric power, thermal power, and coal were ensured to the national economy and the population.



# Production of Certain Basic Industrial Products

<u>Types of products</u>	<u>Unit of measurement</u>	<u>First half of 1986</u>	<u>First half of 1986 as percentage of first half of 1985</u>
Automatic technological modules for machining	unit	103	214.6
Machining centers with various numerical-program control systems	unit	111	150.0
Combination lathes	unit	2,892	135.6
Computer microsystems	unit	13,168	230.1
Disk subsystems for computers	unit	903	120.6
Microprocessor-based automatic telephone exchanges	thousand lines	9	150.0
Diesel internal combustion engines	thousand units	22	110.9
Miniature electric motors	thousand units	974	110.6
Power transformers	unit	4,288	96.8
Electric-powered lift trucks	unit	25,765	100.6
Motor-powered lift trucks	unit	18,729	99.5
Electric hoists	unit	67,495	99.9
Buses	unit	1,286	96.8
Tractors	unit	2,362	100.3
Freight cars	unit	1,438	113.4
Electric power	million kilowatt-hours	21,041	98.7
Coal--total extracted	thousand metric tons	17,942	111.6
Cast iron for processing	thousand metric tons	828	100.4
Steel	thousand metric tons	1,488	105.5
Rolled ferrous metals	thousand metric tons	1,683	102.5
Sulphuric acid (monohydrate)	thousand metric tons	402	103.2
Washing soda, industrial grade 98 percent	thousand metric tons	546	108.2
Nitrogen fertilizers (including carbamide), based on 100 percent nitrogen	thousand metric tons	403	96.9
Plastics, synthetic resins and adhesives	thousand metric tons	181	114.8
Paints and varnishes	thousand metric tons	36	110.1

<u>Types of products</u>	<u>Unit of measurement</u>	<u>First half of 1986</u>	<u>First half of 1986 as percentage of first half of 1985</u>
Tires for trucks, buses, trolleybuses, and trailers	thousand units	445	97.2
Cement	thousand metric tons	2,726	118.8
Bricks	million units	515	103.8
Rooftiles and ridgetiles	million units	24	111.7
Ceramic tiles	million units	146	110.6
Furniture	million leva	239	102.6
Cotton and cotton-type fabrics	million meters	170	100.7
Woolen and woolen-type fabrics	million meters	21	106.0
Tailored goods	million leva	391	106.5
Footwear (not including rubber footwear)	thousand pairs	14,888	103.5
Meat	thousand metric tons	244	109.6
Meat products	thousand metric tons	59	110.2
Fish caught	thousand metric tons	50	110.8
White cheese	thousand metric tons	66	113.2
Yellow cheese	thousand metric tons	17	101.4

The state orders were overfulfilled for industrial robots and manipulators, electric-powered lift trucks, automatic telephone exchanges, weaving looms, excavators, freight cars, domestic washing machines, television receivers, bricks, pulp, paper, furniture, cotton, woolen and silk fabrics, tailored goods, footwear, meat, meat products, fishing, white and yellow cheese, creamery butters, children's foods, soft drinks, processes matured tobacco, etc.

Individual enterprises and economic organizations did not fulfill the state orders for the production of cold- and hot-rolled structural steel plate, steel pipes, combination machine units, phosphorus fertilizers, and chemical fibers and threads. Production is lagging behind of a number of goods intended for the domestic market.

Increased labor productivity was the main factor promoting the development of industry. This factor provided 92 percent of the increase in net production in the branch.

## Capital Investments in Construction

During the first half of 1986 the investment program was once more aimed at the implementation of the strategic task for the further construction and perfection of the material-production base of a mature socialist society. Capital investments amounting to 3.1 billion leva from the amounts established by the annual limits were assimilated. The major part of the investments--approximately 77 percent--were devoted to the development of the material production base in the material production branches, mainly to the development of raw material and energy branches and to the application of scientific-technical achievements in production. A considerable amount of capital investments were invested in those branches that are likely to increase the export opportunities of the country as well as to contribute to the improvement of the people's living standard.

The building and assembling sectors implemented construction work worth 2.2 billion leva with their own efforts. The counterplan for the half year was overfulfilled, the construction work accomplished during the period under review exceeds the construction work accomplished in 1985 by 15.6 percent.

The efforts of the construction workers and fitters were mainly directed at the construction of projects about to be commissioned, in particular at the building of particularly important projects for our national economy, projects that are of a structure-determining character. More than half of the construction work accomplished pertains to projects about to be commissioned and compared with the same period of 1985, this construction work increased by 10.6 percent. Regardless of the successes achieved, delays were allowed to occur in the construction of certain projects about to be commissioned, and the production of goods envisaged to be produced by them is also delayed.

Basic funds worth 1.5 billion leva were completed and commissioned during the period under review, which represents 9.5 percent more than those envisaged in the counterplans of the organizations. Some of the basic economic organizations, engaged in investments, such as the Metalurgiya ET, the Balkankar ET, the Khimicheska Promishlenost ET, the Ministry of Transportation, the Stroytelstvo ET, the Metalooobrabotvashti Mashini ET, and others achieved considerable overfulfillments of their half year counterplans as regards commissioning basic funds.

In building new housing projects construction-assembling work worth 336 million leva was accomplished during the period under review. The construction work accomplished exceeds the construction accomplished during the same period in 1985 by 15.3 percent. Some 10,117 housing units were completed and handed over to the population during the period under review, but a delay was allowed to occur in fulfilling the annual task according to plan as regards housing construction.

## Agriculture

During the period under review the agricultural workers implemented their tasks under difficult agro-meteorological conditions--prolonged winter, low

temperatures in certain areas, which affected the plantations of perennial plants, as well as the drought in April and May 1986, which obstructed the normal development of autumn sowings, were among these conditions. As a whole, the spring crops were sown within short schedules, but the agricultural organizations failed to fulfill the planned tasks for some of the plots. Various agricultural activities were carried out--such as plowing, treatment of the soil and plants with weed killers, chemical treatment against pests and other enemies of the crops. In certain okrugs and agro-industrial complexes the agricultural work is accomplished with delays, it is incomplete, and on a low standard.

Despite the difficulties caused by unfavorable conditions in 1985, the public animal breeding sector, during the period under review, guaranteed a further increase of production. The total animal production is 3.9 percent greater compared with the same period in 1985. Good results were obtained through the care of the agricultural organizations and the assistance of the state for the preservation of animal herds and flocks. The number of animals in the agricultural organization on 1 July 1986 is as follows:

	On 1 July 1986 in thousands of units	Number of heads on 1 July 1986 as percentage of 1 July 1985
Cattle	1,391.3	99.2
including cows	479.9	99.0
Pigs	3,015.3	107.6
Sheep	7,161.8	97.9
Fowl	29,000.9	102.6

The number of cattle increased in the agricultural organizations of the following okrugs: Sofia city, Blagoevgrad, Plovdiv, Sliven, and Tolbukhin; the number of cows increased in the following okrugs: Sofia city, Pleven, Tolbukhin, and others. The number of pigs increased in all okrugs, and particularly in the okrugs where their number is the greatest, such as: Veliko Turnovo, Vratsa, Mikhaylovgrad, Pazardzhik, Pleven, Razgrad, Ruse, Silistra, Stara Zagora, Tolbukhin, Shumen, and Yambol Okrug. The increase of fowl in the following okrugs is more considerable: namely, in Veliko Turnovo, Pleven, Silistra, Mikhaylovgrad, Sofia, Turgovishte, and other okrugs. The number of sheep in most okrugs is 1 to 2 percent lower than during the same period of 1985 and increased in the following okrugs: Sofia city, Gabrovo, Pernik, Sliven, and Stara Zagora.

The production of milk (all types of unprocessed milk) increased during the period under review by 3.7 percent, as compared with the same period of 1985, while the production of cow's milk is 2.8 percent greater, the production of sheep's milk 9.1 percent greater than during the same period of 1985. Compared with the same period of 1985 the production of eggs increased by 6.9 percent during the period under review.

In a number of okrugs and individual agro-industrial complexes, owing to subjective reasons, important shortcomings were allowed to occur. The number of cattle and sheep decreased, their fertility is unsatisfactory, and the rates of increase of productivity are low. No sufficient care is devoted to fodder reserves for the cattle and to the correct utilization of fodder. The decrease of cattle is considerable in the following okrugs: Burgas, Kurdzhali, Lovech, Mikhaylovgrad, and Pazardzhik. The decrease of sheep is considerable in Vratsa, Veliko Turnovo, Pazardzhik, Ruse, and Tolbukhin Okrugs.

Compared with the first half of 1985, the purchase of animal husbandry production--of cattle and fowl for meat--increased during the period under review by 9.6 percent. The purchase of milk (all types of milk with a 3.6 percent fat content) increased by 5.0 percent, and the purchase of eggs--by 4.3 percent--during the period under review. The plan for the purchase of these products for the first half of 1986 was overfulfilled. More cherries and certain types of vegetables were purchased during the period under review compared with the same period of 1985.

#### Transport and Communications

The country's transport and communications system continued to develop and improve during the period under review.

The economic organizations in the transportation sector for general use transported 7 million tons, or 3.3 percent more freight than during the same period of 1985. Railroad transport transported 6.4 percent more freight, and automobile transport transported 2.5 percent more freight, during the period under review, compared with the same period of 1985.

The plans were fulfilled according to a number of technical-economic indexes. In railroad transport the average daily productivity of one car from the freight car pool increased by 6.4 percent and the productivity of one working engine increased by 3.5 percent during the period under review as compared with the same period of 1985. The utilization of the mileage of freight automobiles improved and this applies also to the use of passengers' seats in buses.

During the period under review 43 million, or 3.0 percent, more passengers were transported compared with the same period of 1985. The work connected with the improvement of transportation services for the population improved. The trolley bus lines in Kazunluk and Sliven were commissioned for regular use. During the period under review eight new trains were commissioned, five of which are international trains, and one train composed of sleeping cars and couchettes, was commissioned for the Sofia-Burgas line.

In order to cope with the increased volume of passenger traffic, 360,200 extra bus journeys, 68 extra train services, and 2,275 more railroad cars were provided during the period under review.



Specific measures are adopted for improving the transport services for the population in small settlement systems, such as the taximeter services for the population.

The postal network was expanded by 13 new post offices, 10 of which are situated in villages. During the period under review 64,949 new telephones were installed and 55,153 of them are for private use. During the period under review 121 new telex stations were commissioned. A new television transmitting station was commissioned as well and 17 radio relay stations, as well as 17 television relay stations were installed.

More income was obtained from the communication services than envisaged by the plan during the period under review, and more than during the same period of 1985.

#### Foreign Economic Relations

Positive results were achieved during the half year in the field of foreign trade relations. The foreign-trade goods turnover rose to 13,158 million convertible leva, and is 4.4 percent greater than the figure for the first half of 1985. Bulgaria's foreign economic relations continued to develop successfully with the socialist CEMA member-states, and primarily with the USSR. The relative percentage of the goods exchange with these countries makes up 78.4 percent and 58.8 percent respectively of the total goods exchange. A further deepening of Bulgaria's participation in the international division of labor was achieved, mainly in socialist economic integration. Our country is taking an active part in the work of fulfilling the Complex Program for the Scientific and Technical Progress of the CEMA Member-States up to the year 2000, in the fulfillment of the program for Scientific and Technical Cooperation With the CEMA Member-States, and so on.

#### Trade and Services to the Population

The producer-enterprises in the country and the foreign-trade organizations provided the domestic market with 10.5 percent more goods than in the first half of 1985. There were increases in the volumes both of the goods for daily consumption and of a number of new and luxury goods.

Compared with the first half of 1985, the production of basic goods for the home market was as follows:

First half of 1986  
as percentage of  
first half of 1985

Meat	103.1
Milk	100.9
White cheese--total	98.2
including sheep's cheese	129.3
Yellow cheese	97.4

**First half of 1986  
as percentage of  
first half of 1985**

Creamery butters	105.1
Eggs	105.0
Fish and fish products	100.1
Edible vegetable oils	113.7
Confectionery products	99.5
Fresh vegetables--total	96.1
including field tomatoes	166.3
Soft drinks	107.1
Beer	106.8
Finished cotton and cotton-type fabrics	106.5
Finished woolen and woolen-type fabrics	86.3
Knitted underwear	113.5
Knitted outer garments	100.7
Footwear (not including slippers)	103.4
Stockings and pantyhose	100.9
Furniture	109.6
Television receivers--color	195.5
Radio receivers	94.4
Electric washing machines	106.7
Domestic compressor-type refrigerators	106.1
Electric cookers	114.4
Solid-fuel heating stoves	113.6
Brown coal	94.8
Briquettes	116.7

The goods provided for the home market ensured fuller satisfaction of the population's growing requirements. However, the production of goods for the home market must be expanded and increased at even higher rates and on an even broader scale, in order to ensure the regular and all-year-round supply to the population of the goods it demands.

A goods turnover to the value of 7,496 million leva was achieved in retail trade, including public catering. In all okrugs the trading organizations achieved a higher goods turnover as compared to the first half of 1985. The greatest increases in goods turnover were obtained in Mikhaylovgrad Okrug, 13.6 percent; Blagoevgrad Okrug, 13.2 percent; Smolyan Okrug, 13.0 percent; Shumen Okrug, 12.4 percent; Pernik Okrug, 11.7 percent; and Kurdzhali Okrug, 11.5 percent. Notwithstanding this, individual populated areas did not receive regular supplies in sufficient quantities of certain food and nonfood products.

The volume of household services carried out for the population rose by 7.5 percent compared with the first half of 1985. The increases in the basic types of services were as follows:

**First half of 1986  
as percentage of  
first half of 1985**

Building and repair services	119.4
Radio and television maintenance and repair	112.9
Comprehensive services	112.6
Laundry	111.7
Opticians' services	110.8
Lift maintenance and repair services	110.1
Tailoring and dressmaking services	108.8
Footwear and haberdashery services	107.8
Metalworking services	107.0
Motor vehicle maintenance and repair	105.5

In all okrugs except Pernik Okrug more services were carried out as compared to the first half of 1985. The greatest increases were in Silistra Okrug, 27.3 percent; Vratsa Okrug, 21.9 percent; Blagoevgrad Okrug, 16.1 percent; Tolbukhin Okrug, 13.1 percent; Pleven Okrug, 12.6 percent; and Mikhaylovgrad Okrug, 12.3 percent.

The results achieved in the first half of this year form a good basis for successfully fulfilling the annual plan task. During the coming days and months a full mobilization of the labor collectives is needed in order to further improve the organization of the work and increase efficiency and quality in all areas and activities in the national economy. Particular attention should be given to speeding up the introduction of scientific and technical achievements into practice; fully utilizing the intensive factors in production; improving the utilization of the basic funds, raw materials, other materials, and manpower; drastically improving quality; smoothly and regularly executing the contracts for production-sharing deliveries and material and technical supplies; ensuring production for export and for the home market; and strengthening discipline. Fuller use must be made of the advantages of the new administrative structures and wide use made of the capabilities of the self-governing organizations in order to develop the initiative of the workers and guarantee the overfulfillment of the plan for the whole of 1986 with regard to all indices.

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ECONOMY

GERMAN DEMOCRATIC REPUBLIC

#### INCREASED TRADE WITH SWEDEN OUTLINED

Stockholm DAGENS NYHETER in Swedish 25 Jun 86 p 10

[Article by Dan Magnerot: "Now Exports to the GDR Are Going To Increase"]

[Text] Swedish trade with the GDR will increase. Olof Palme's state visit to the GDR 2 years ago yielded results.

"The 1984 state visit resulted in more intense trade between the two countries," said Ake Myrlov, who is in charge of state trading countries at the Export Council.

Today the party leader and head of state of the GDR, Erich Honecker, will land in Stockholm. This is a return visit after Palme's visit to Berlin 2 years ago. But Honecker is making more than simply a courtesy visit. GDR-Swedish trade will be a major topic of discussion.

Swedish exports to the GDR consist mainly of grain and manufactured goods. But we also export iron, steel, paper, and pulp. Last year Swedish exports to the GDR totaled 691 million kronor. That was 14 percent lower than in 1984.

#### High Imports

Our grain exports, in particular, were sharply reduced. There was a 53-percent drop between the 2 years, from 279 million kronor to 132 million kronor. Tool products were the biggest export items, accounting for 177 million kronor.

Thus, Swedish exports to the GDR are relatively low. Our imports from the GDR, on the other hand, are relatively high. In 1985 they amounted to 3.3 billion kronor. Consequently, Sweden has a high import surplus in its trade with the GDR.

Our main imports from the GDR are petroleum products: heating oil and gasoline. In 1985 we imported products of this type worth 2 billion kronor. The crude oil comes from the Soviet Union, but we also import chemicals and manufactured goods. Bicycles are one example.

The high import surplus in our trade with the GDR cannot be seen in isolation, however. Imports from the GDR are part of our trade with the entire Eastern bloc. Thus, an import surplus from the GDR may well be compensated by an export surplus to one or more other Eastern countries.

Since Olof Palme's state visit to Berlin in 1984, however, things have begun to happen in Swedish trade with the GDR. Thus, for example, a consortium led by the Johnson Concern signed a framework agreement with the East Germans just over 1 month ago. For the Swedish side, the framework agreement will bring in 6.4 billion kronor. Construction projects are the main items under discussion.

The construction firm Siab, along with Cellchem (Nobel Industrier) recently signed a contract for the construction of a chlorate plant in Bitterfeld. The plant will be used to manufacture chlorine dioxide for bleaching pulp. This order is worth 1 billion kronor, with the process side taking half and the construction side taking the other half. The work will be completed in 1988.

Siab is also constructing a Grand Hotel in Berlin. A hotel in Dresden was recently completed. Several other construction projects in the GDR involving Swedish interests are also underway.

The statistics on our trade with the GDR already reflect a change. During the first quarter of this year our imports dropped by 35 percent and our exports increased by 18 percent, compared to the first quarter of last year.

"There is every reason to believe that the gap in our trade with the GDR will continue to close. The many new contracts demonstrate a clear willingness on the part of the GDR to increase trade with Sweden," said Ake Myrlov at the Export Council.

Ake Myrlov also said that Swedish companies were extremely interested in trade with the GDR. This is reflected, in particular, by the numerous corporate leaders who will discuss business with the East German delegation on Friday: ABV, Asea, Atlas Copco, Volvo, JCC, Procordia, Siab, Perstorp, Johnson, and others. All these companies will participate--and fight for a chance to enter a more and more interesting East German market.

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ECONOMY

GERMAN DEMOCRATIC REPUBLIC

#### ROLE OF MATHEMATICS, CYBERNETICS IN ECONOMIC STRATEGY CITED

East Berlin WIRTSCHAFTSWISSENSCHAFT in German Vol 34 No 4, April 86 pp 584-95

[Article by Hans-Dieter Anders, Wolfgang Hildebrand, Hans Schilar: "Eighth Conference on 'Mathematics and Cybernetics in the Economy'"]

[Text] In September 1985, the 8th Scientific Conference on "Mathematics and Cybernetics in the Economy" convened in Magdeburg. The organizer of the Conference was the "Otto von Guericke" Technical College in Magdeburg. Co-organizers were the Magdeburg District Council, the state-owned "Karl Liebknecht" Combine in Magdeburg, the GDR Academy of Sciences, the GDR Mathematics Society, the "Bruno Leuschner" Business College in Berlin, and the state-owned Robotron and data processing combines.

The conference, in which some 500 scientists and practitioners from the GDR and the socialist community abroad participated, revolved around what Dr. Seiffart, the first vice president of the "Otto von Guericke" Technical College, described in his opening speech as a need for increased application of mathematics, cybernetics, statistics and computers to the national economy. As the products and effects of key technologies, particularly microelectronics, come more and more to the fore, new demands are made on qualifications and operations in numerous manufacturing and non-manufacturing areas. It is therefore important for us to draw the right conclusions for research, theory and economic application from this.

In his welcoming speech to the conference, Buschmann, the officiating chief magistrate, referred to the priorities of the Technical College which are used by Magdeburg combines and corporations on the basis of complex agreements. Among these are the following:

--the acquisition of more modern and more effective technology, in particular low-maintenance automated manufacturing systems in order to increase production in the machine building industry;

--automation solutions for products and plants in order to control production through microelectronics;

--basic solutions for rationalizing construction work and technological production preparation;

--tasks to improve material and power economy as well as product quality.

In his address to the conference participants Dr. Menzel, the head of the Ministry of Higher Education's economics department, cited the following reasons for the conference's importance: First, with their participation the scientists of the Ministry of Higher Education, the Academy of Sciences, the Mathematics Society and the combines make a worthwhile contribution to the ambitious preparations for the 11th Party Congress of the SED; second, the revision of the resolution of June 1983 concerning the training and retraining of engineers and economists states that the knowledge conveyed during the conference is to be used in the application of mathematics, cybernetics, statistics and computer science to economic training and retraining; and third, still greater effort must be made to arm the new style of economist with the knowledge, skill and tools to meet the demands of the 1990's. In this context, Menzel referred to the Conference of GDR University and College Presidents held in July 1985.

During this conference the Minister of Higher Education stated that "education as a whole must place greater emphasis on immediately usable knowledge in the fields of mathematics, statistics, cybernetics and information processing, and the skills to operate modern, currently-employed tools must be developed more surely. Information processing is the primary means by which these goals can be reached, and computer-aided methods of operation must be more strongly developed both in the teaching of economics and in practical training courses." Based on these suggestions and on the system concepts arising from computer-aided jobs in the economic sections of state-owned institutions and combines, the Economic Department and the Ministry of Higher Education's Economic Advisory Board initiated concrete orientations for intensified training in the computer field.

Menzel also addressed the question of what form this computer training should take, a question he described as an ambitious task for the Information Processing/ASU economic advisory board and the information processing study group of the Ministry of Higher Education's Economic Advisory Board. Currently the following questions require answering:

--Which facts, abilities and skills must every graduate in economics possess in the computer field and which educational tasks can be derived therefrom?

--Within this more in-depth computer instruction, which educational goals should be striven for in the various economic fields?

--What demands must a graduate of the business computer field fulfill in the 1990's (software development, adaptation work, communication nets, data bank creation, office automation, etc.)?

The revision of the concept of training and retraining for engineers and economists provides an excellent opportunity to effect a broad, qualitative improvement in the concurrence of the cited instrumental specialities with economic technical training. This means, however, that it must be determined at the same time what advances have actually been made in increasing the use

of mathematics in economic technical training since the 4th edition of the basic economic study was adopted. According to the speaker, the level varies considerably. Moreover, in revising the concept of engineer and economist the Ministry of Higher Education's Economic Advisory Board and the Economic Department of this Ministry consider it necessary to hold a colloquium on teaching methods with the goal of evaluating the revision of the 4th edition of the cited study and of establishing directions for further technical work. In this context the following problems will also play a role:

1. Conveying the contents of instrumental specialities in the time allotted and with a view toward future requirements;
2. Coordinating the subjects of mathematics, statistics, cybernetics and information processing with the goal of implementing mutual utilization of the knowledge already conveyed;
3. Forming a closer interrelationship between the above-mentioned subjects and economic technical training.

The work of the conference took place in plenary, sectional and evening meetings. A total of three plenary lectures were held and 156 out of 205 submitted lectures were held in the sections. In addition, six evening meetings were organized on selected topics.

The first plenary lecture was presented by H. Rost, representative of the GDR Council of Ministers' State Planning Commission. The theme of the lecture was "The Improvement of the Socialist Planned Economy and Requirements for EDP Utilization."

By way of introduction, he said that the realization of economic strategy was and is connected to qualitatively new requirements for the development and improvement of the socialist planned economy. This means that management, planning, balancing of accounts, performance evaluation, stimulation and economic accounting must be fully adapted to the necessary economic performance growth by means of extensive intensification of all areas of the national economy. The principle basis for this are the measures resolved by the party leadership and the government in past years. Rost described the essence of the measures designed to improve the socialist planned economy in six points:

1. Consolidation of democratic centralism, which means increasing the role of central state planning and reaffirming the responsibility of the combines for the closed reproduction process. This is primarily a matter of identifying the qualitative factors of economic growth (derived from economy-related requirements) more precisely in the plan, of promptly preparing and implementing necessary changes in the production and export structure, of controlling economic interdependence and of making the criteria for extensive intensification economically effective. In the process it is absolutely essential to raise the level and quality of physical accounting as the main method of socialist planning. The measures resolved for this purpose are also



largely aimed at significantly increasing the flexibility and responsiveness of planning and account balancing procedures;

2. Further consolidation of the concurrence between the economic interests of businesses and combines with the requirements of the national economy. Particularly important here is the role of the combine as new type of production organization and management. They were made responsible on the national level for all decisive phases of the reproduction process. Fully living up to this responsibility involves two things: First, much more importance must be accorded the acceleration of both the reproduction process as a whole and every individual phase—from scientific and technical preparation to sale and payment; and second, concrete measures must be introduced that promote such acceleration. Accomplishing these goals requires the widespread use of microelectronics and computer technology as well as the flexible automation of entire manufacturing sections including transportation, transshipment and storage processes;

3. Improved economic effectiveness of science and technology by speeding up the renewal of products and technology. Primarily this means using the performance specifications to make economic products oriented toward international optimum values. Price-setting for new products and the cost and price ceilings established in the performance specifications are designed to stress ambitious goals and interest combines and businesses in a rapid and extensive use of research and development results;

4. Improved management, planning and economic accounting in the area of investment and capital reproduction with the following goals: to increase significantly the efficiency and use of invested funds; to make the streamlining of capital the main form of capital reproduction; and to base the plans consistently and at all levels on the investment effectiveness criteria derived from economic reproduction conditions. To this end the planning of science and technology, investment planning and the planning and account balancing of corporate work capacity are more closely interconnected;

5. Improved management and planning of corporate work capacity in order to accelerate the rise in work productivity, to use existing work capacity fully, especially the greatly increased qualification potential of the work force, to aim toward the solution of economic priorities, and to ensure employment for all citizens of the GDR.

6. Increased use of economic accounting to improve the ratio of operating expenditures and proceeds. The extensive measures for creating real standards of value for human labor and labor-intensive products serve this goal. These measures include changes made in industrial prices, agricultural price reform, the introduction of contributions to corporate funds and the revaluation of capital in industry, civil engineering, traffic management and food-processing enterprises. The new standards of value reflect necessary corporate expenditures more realistically, ensure a standard profit for self-contained units based on this level of expenditure and increase economic pressure on cost reduction.

On the whole, Rost determined, qualitatively new demands on the use of electronic data processing (EDP) in management, and account balancing and settling are connected with the resolutions to improve management, planning, economic accounting and the homogeneity and universality of the socialist planned economy based on them. These demands aim at technologically new solutions, increased speed and broader effectiveness in EDP application.

By means of modern computer technology, said Rost, and the increased effectiveness potential of information processing, the number one priority is that progress in the extensive intensification of the national economy be made in entirely new dimensions. A promising way in which to achieve the necessary economic dynamic based increasingly on key technologies, which are also spreading rapidly on the international level, is the development and application, particularly in the combines, of computer-aided production preparation and direction. The tasks connected herewith presented a far-reaching process, during the course of which all work in the economic cycle of the combines is fundamentally restructured. This work ranges from research and development, construction and planning to technological preparation to manufacture and sale of products and services, including management and planning tasks for highest work productivity and acceleration of the entire reproduction process. For this purpose all combines should take advantage of the opportunities presented by the available modern computer technology, be it their own or that of the data processing combine, to achieve dynamic growth in performance and effectiveness, as well as contributing to the creation of the necessary software for it, to include organization and project solutions.

As second requirement for the use of EDP in planning and account balancing the speaker named process-oriented, daily information processing as well as the application of EDP to more complex tasks. For this it is necessary to use EDP technology for operational and on-the-job planning and account balancing tasks and to ensure reliable availability and interactivity as well as effective response-time behavior of the computer technology. This should entail efficient cooperation of central and on-the-job information processing based on the division of labor concept. It has already been proven in practice that computer-aided accounting not only permits the rationalization and acceleration of a company's operations as a whole, but also the solving of qualitatively new questions.

The use of more complex EDP solutions when working with business mathematical procedures is necessary in order to identify more precisely the increasingly complicated cooperation relationships within and amongst various branches and to aid the determination of leading economic ratios. Connected with this is the task of using EDP to make more interdependence calculations during the planning and account balancing of the central government organs and the combines. To do this, however, more effective programming systems are needed.

A third fundamental requirement consists of upgrading the necessary software and making it available more quickly. This holds true for both operating systems and other software. In accordance with the formulated resolutions one can assume that the manufacturers and suppliers of the technical resources are responsible for providing the operating systems and the users of the technology are responsible for designing the specific user software.

Fourth, Rost urged, proven EDP solutions must be more rapidly disseminated and reused, and the development of new solutions should be oriented toward multiple-use, coordination and universality right from the beginning. Universality, uniformity and EDP-based organization of the planning system on the basis of planning order are important prerequisites for the ever increasing application of uniform EDP solutions for planning and account balancing on all levels of economic management. The consistent implementation of this approach is a twofold economic requirement. On the one hand, the speed and effectiveness of EDP application depends largely on how successful one is in achieving, through widespread use and reuse of proven EDP projects, the necessary high effectiveness and adaptability of EDP solutions in combines and central government organs. On the other hand, the high and still rising expenditures for planning and introducing new EDP solutions requires a systematic and coordinated course of action from the outset, so that a high economic yield is achieved through rapid reflux of the expended resources.

The fifth requirement connected with the use of EDP involves the planning of these processes itself. All tasks for increasing the technological level, such as using computer-aided systems and industrial robots, modernizing existing plants and introducing new equipment should be planned, economically evaluated and settled as complex technological solutions. This would trigger a host of new questions that must be solved by means of economic research and practical application.

A sixth and last requirement concerns the training and retraining of key personnel, for this is what finally determines the level and speed of EDP use. Rost suggested that the tasks connected with computer-aided production preparation and direction as well as with planning and account balancing make it necessary to intensify the process of training and retraining by a variety of methods.

In conclusion, Rost formulated several demands for new project solutions engendered by the increased need for management, planning and economic accounting. According to these demands, project solutions should first and foremost provide the opportunity to evaluate the complex effects of decisions corresponding to economic interdependencies. They should ensure a flexible data supply in order to accommodate the rapidly changing need for data, and in order to provide data support to those in charge with minimal response and computer time.

In a second plenary lecture Drs. Manteuffel, Seiffart and Tietboehl and economist Trostel from Magdeburg spoke on the topic "The Utilization of Mathematical Methods and Procedures in Corporations and Combines of the Magdeburg District." They presented a few select results achieved by students and scientists of the "Otto von Guericke" Technical College and colleagues from the Wilhelm-Pieck University in Rostock and the Karl-Marx-Stadt Technical College, in conjunction with business partners. Many practical problems were examined and the results achieved were applied primarily to territorial rationalization. Among the partners were the Regional Planning Commission, large-scale enterprises and local government organs of the city and district of Magdeburg.



The authors limited themselves to three areas: transportation and routing optimization, seriation problems and machine utilization, and multiple-machine assignment or job lot optimization. In transportation and routing optimization the first problem addressed was that of waste management, which involves the optimization of sanitation runs and the siting of waste disposal areas. Based on studies made both in a residential area within the city of Magdeburg and in a rural district, waste management costs, fuel consumption, overall costs and total driving time of the route were compared and evaluated. It was established that route optimization is the best solution to waste disposal problems in rural areas, whereas waste disposal in urban areas could best be carried out on the basis of graph theory. The results of these studies provide the groundwork for similar solutions in all other districts around Magdeburg. Another detailed example was the optimal structuring of sugar-beet transportation from producer to sugar factory. Here, too, in addition to actual transportation problems, questions of interim storage, loading points and transport operator rotation played a role. In conclusion, the authors listed other successfully resolved problems:

--efficient transportation organization in the services sector of a district;

--establishment of optimal routes to ease commuter traffic in three-shift operations;

--analysis of correlations within the territorial structure;

--supplying slaughterhouses with livestock;

--effectively supplying industries with graded and ungraded gravel and sand.

After explaining the mathematical approach to seriation problems, Manteuffel, Seiffart, Tietboehl and Trostel presented a complex machine utilization problem which was handled and solved together with the SKET in Magdeburg. It was pointed out that before the solution could be found pure research studies in that field had to be performed and suitable approximation algorithms had to be developed. Next, short-term production planning problems were addressed, primarily that of predetermining the timed processing sequence of production orders at each processing station. This takes into account the operating cycle sequence of the production orders, adherence to assembly deadlines and minimizing operating fund commitment of all production orders by means of minimal pass duration and high time utilization at the processing stations. For this the authors developed a simulation program that expresses for a rather long interval the exact list of unconditional transfers, the list of delays in unconditional transfers, the machine utilization plan and the prognosis for the exact unconditional transfer.

Without going into details, a few results from the third area (multiple-machine assignment) were also mentioned. For example, it was verified that collective multiple-machine assignments are more efficient and effective than individual ones. Considered in this context was the fact that models for assessing multiple-machine assignment systems were developed that can be used

to determine rationalization measures in the areas of reconstruction, expansion and redesigning of production sections.

For the future application research of the Magdeburg Technical College in the scientific fields of industrial organization and operations research (Socialist Business Administration Section) and Mathematical methods of operations research (Mathematics and Physics Section) the authors named the following priorities among others:

- limited parts list dissolution and job lot optimization;
- establishment of optimal multiple-machine assignment with field-related complex effectiveness instructions in its introduction and further application;
- planning and organization of production by means of the integrating influence of material-saving processes;
- modeling of technological processes, particularly the creation of discrete control strategies in the field of reconstruction and automation measures (complex production control and machine utilization problems).

In closing, Manteuffel, Seiffart, Tietboehl and Trostel drew a few general conclusions. They emphasized that it is precisely at this time that the application of mathematical methods in economic practice, combines and corporations and government organs and institutions must be organized and implemented even more consistently than before. According to their experience, however, solving practical problems without research into the field is infeasible.

The results and tasks for cooperation between the "Otto von Guericke" Technical College in Magdeburg and territorial economic institutions were also the occasion of a special evening meeting, in which, among others, the chairman of the Regional Planning Commission participated.

In the third and last plenary lecture Dr. Haerting, organization and data processing director at the state-owned "Herbert Warnke" Combine for Reforming Technology, reported on experiences in the combine during the introduction of CAD/CAM solutions. (Since the speaker was detained, the lecture was read by Wagler). Proceeding from the central requirement to accelerate the integration of new technological concepts based on advanced microelectronics, he started by outlining four main directions:

1. Integration of computer technology in the delivery and performance profile. Flexible automatic production systems are needed with automated production flow and tool rotation in the form of, for example, completely automatic production lines and transfer moulding presses;
2. Integration of computer technology in the technological process. Automated NC- and CNC-controlled production engineering is an indispensable prerequisite from a production engineering standpoint for

producing highest quality piece parts and subassemblies for high-performance and automation technology;

3. Implementation of CAD/CAM technologies. Their application to construction and technology plays an important part in effectively solving qualitatively new construction and technological problems during the development of, and rapid transition to, new products;

4. Implementation of computer-aided information and communications technology. Data banks for technical source data are used to provide the interface between CAD/CAM solutions and the mass data processes for planning, preparing and controlling production.

It is therefore a matter, stressed Haerting, of in-depth, long-term, qualitative changes in construction reproduction conditions which, in turn, determine the prospects of this sector. These changes cannot be realized only by means of qualitatively expanded potential in research and development, construction, technology, planning, material economy, production control and sales activity. They would also require a new quality of work in these areas. In fact, it would mean the widespread operational use of microelectronics in the form of modern computer, communications and control technology.

Haerting then showed how, in the parent plant of the metal-forming combine, this task was undertaken and to a certain extent also solved until now. It meant devoting many man-hours to software development problems. He described the fruitful cooperation in this area with colleges, academic and industrial institutions and the state-owned combine for data processing, which as a user holds itself responsible for the application software. This personal responsibility results from the necessarily close interrelationship between software development and process formation. Complex computer-aided systems would be impossible to realize without experience in that particular field, without directly using skilled labor from the most varied fields of application to formulate tasks, and without determining concrete solution methods. The type of process needed to build such systems and the various interrelationships between software development and process formation would require their own software potential. Of course, the basic principle of user responsibility for application software does not, according to the speaker, in any way exclude the increasing importance of centrally developed user modules, of basic solutions that can be assembled and expanded for data bank and computer net technology, for example, and of operations systems. As far as the reuse of user software is concerned, the combine follows the strategies below:

--assumption of the entire solution with less adaptation and more specific expansion;

--gradual assumption of partial solutions with broad operationally specific individual solutions;

--gradual integration of subprocesses from other combines into its own software and hardware systems.

These strategies are coupled with a specific equipment concept in which there is a balanced relationship between centralized and decentralized data processing technology. The emphasis is thereby placed on increased outfitting with process-related data systems engineering. This is linked with the intent to process large program packets for ESER facilities centrally, particularly with the resources of the data processing combine's operations.

Haerting also referred to problems of economically evaluating complex computer-aided solutions as well as to the fact that these solutions led to far-reaching changes in mode of operation. This caused great demands to be placed on the management of processes for implementing computer-aided complex solutions. As priorities for the further formation of CAD/CAM solutions he named the following: computer-aided solutions for the metal-forming machine tools industry, CAD/CAM solutions for tool manufacture a CAD/CAM solution for plastics machines and CAD/CAM electronics for the rationalization and guarantee of increased output in the building of electronic control systems.

Haerting devoted the last part of his lecture to a few principle conclusions stemming from previous experiences in the development and use of complex computer-aided solutions.

1. In the combine and combine corporation the integration of modern information processing systems into research and development, preparation, planning and control of production should be accelerated. The speed with which this task is accomplished is of central importance in controlling changing reproduction conditions, especially high renewal rates in product, export and production profiling, processing strategy implementation and modernization concepts. Expansion of complex computer-aided systems requires short-term concepts on the corporate and combine level, for their requirements regarding hardware and software development must be centrally planned and balanced.

2. CAD/CAM technologies are key technologies that demand their own software potential because their gradual development and implementation is in constant interaction with the expansion of the complex reproduction process.

3. Proven software systems are to be analyzed in order to improve existing models, algorithms and programs for widespread reuse.

4. Cooperation with colleges, academic institutions, industry research centers and the data processing combine is to be expanded and intensified.

5. Specific training and retraining measures in all companies should be planned and implemented in order to make the existing technical engineering potential accessible to CAD/CAM technologies according to its usability.

The following topics were discussed in the sections:

Section 1: possibilities, results and problems in the application of mathematics to the economic sciences (chairmen: Koerth, Schilar, Tietboehl)



Section 2: modeling of economic processes in their entirety (chairmen: Knop, Hollatz, Woelfling)

Section 3: analysis and comparison of economic activity in combines and corporations (chairmen: Salecker, Sommer)

Section 4: optimization of management and planning processes in combines and corporations (chairmen: Manteuffel, Lassmann)

Section 5: complex rationalization of management, planning and administrative processes by means of information processing (chairmen: Kurth, Haehnel, Kupper, Stemmler)

Section 6: control of corporate production processes (chairmen: Seiffart, Stanek, Runge)

The results of the work in the sections primarily identified the following trends:

--greater practicability and user-friendliness of the work results presented by colleges, academies and those working in the field. This is demonstrated by the fact that for a large number of the submitted models tested programs exist, which are being used by industry combines, the State Planning Commission, the Government Central Administration for Statistics and other institutions;

--stronger consideration for practical questions of the SED's economic strategy in order to structure the management, planning, account balancing and optimization processes more effectively and on more economic, corporate and territorial levels corresponding to intensification demands;

--more complex approaches to economic processes. This demand made on modeling is a result of the diverse interrelationships. It reveals more clearly the possibilities and limits of the present arsenal of methods and tools;

--broader and more effective use of modern computer technology based on data banks, the nucleus of computer-aided management information systems for combines and ministries.

Podium discussions on priority topics took place in sections 1 and 3. In section 1 the topics discussed were the function of mathematics and cybernetics in the economic and sociological knowledge process. On the basis of written contributions by Hoerz and Liebscher ("Epistemological Questions of Mathematical Processes in the Social Sciences"), Thiel ("Mathematics, Speech, Dialectics"), Piehler ("Interaction of Economy and Mathematics from a Mathematician's Perspective"), von Kaenel ("Status, Balance, Problems and Prospects of Cybernetics in the Teaching and Practice of Economics in the GDR"), Ludwig and Telle ("Contributions of Interdependence Account Balancing to Economic Research") and K. Schwarz ("Influence of Mathematical Optimization on the Development of Socialist Economic Theory"), an extensive discussion developed in which the present status and the discussion problems were outlined and the prospects and assignment of duties were formulated.



The podium discussion in section 3 concerned "Experiences and Realizations Resulting from the Application of Statistical Procedures to Rule of Precedence, Causal Research and Optimum Value Orientation in Performance Comparison." The introductory lecture was presented by Raab. Contributions by Horn, H. Schwarz, Buettner, Heyne, Kriegenherdt, Donath, Wittig, Hillert, Hildebrandt and Franke dealt with important ways and problems of mastering the content and tools of the performance comparison.

According to tradition, the conference's scientific program included evening meetings. The topics and priorities discussed were as follows:

1. Results and tasks derived from the cooperation between the Magdeburg Technical College and territorial business concerns (chairmen: Seiffart, Manteuffel, Trostel, Tietboehl). Using the plenary lecture held on this subject as a starting point, methods applied and economic effects achieved were described and discussed in detail;

2. Computer-aided optimization in EDP interaction (chairmen: Lassmann, Fischer, Kummerow). Problems of computer-aided optimization in EDP interaction and PS-OPSI interaction were focal points of the discussion;

3. The theory of uncertain sets and possibilities for their practical use (chairmen: Zellmer, Juettler, Peissker). The central issue was the question of applying the theory of uncertain sets to decision making during complex process analysis as well as its operation in linear optimization tasks;

4. Computer technology and systems data of the state-owned Robotron combine (chairman: Junge). Presented and discussed were planned computer systems of Robotron, operating systems and languages, communications possibilities in ESER and SKR local and public nets, the development of personal computers and the formation of CAD/CAM systems;

5. Problems of mathematical training for economists and economic training for mathematicians (chairman: Wunderlich);

6. The magazine "Computer Technology/Data Processing" discusses with readers the question of software use (chairman: Loll). The following questions were posed: How is existing software judged? Out of all software used, what is the proportion of self-developed software? During the production of software are software tools used and with what result? What solutions exist or are still to be developed for software evaluation?

The meeting on mathematical training for economists and economic training for mathematicians aroused particular interest. Based on introductory lectures by Koerth ("Mathematical Training of Economics Students") and Kurzhals ("Economic Training of Mathematics Students") a lively and constructive discussion developed on the content and organization of such training in universities and colleges. In his closing comments Dr. H. Wolf, chairman of the Scientific Advisory Board at the Ministry of Higher Education, talked about the importance of such an exchange of views for the implementation of the resolution

concerning the training and retraining of engineers and economists. He confirmed the idea of creating those conditions and training structures that make it possible to train graduates for society who are in a position to effectively solve tasks related to extensive intensification and modern productive force development.

This conference was once again the site of an extensive exchange of experiences. By presenting and discussing new research results and by passing on knowledge gained from the practical application of mathematics, statistics, cybernetics and computer technology, the conference participants advanced economic work and increased its effectiveness during the implementation of the SED's economic strategy. Organizers of the 11th conference on "Mathematics and Cybernetics in the Economy" in 1988 will be the Karl-Marx University in Leipzig, in collaboration with other city colleges.

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ECONOMY

HUNGARY

ECONOMIC RELATIONS DISCUSSED WITH AUSTRIA

Budapest MAGYAR HIRLAP in Hungarian 8 Jul 86 p 5

[Interview with Szabolcs Fazekas, department head in the Ministry of Foreign Trade, by Istvan Matko; date and place not given; first two paragraphs are MAGYAR HIRLAP introduction]

[Text] As we have reported, Gyorgy Lazar, the chairman of the Council of Ministers, will meet with Dr Franz Vranitzky, Austria's new chancellor. The following interview with Szabolcs Fazekas, a department head in the Ministry of Foreign Trade, deals with the present state and further opportunities of Hungarian-Austrian economic relations.

Relations between Hungary and Austria are being cited, in the two countries and throughout Europe as well, as an example of the peaceful coexistence of countries with different social systems. This peaceful coexistence is the embodiment of the two countries' purposeful policies which, over a period of many years, have taken each other's specific conditions far-reaching into consideration. It also reflects the desire of the Austrian and the Hungarian people to maintain cordial relations with each other. A similar phenomenon can be observed also in the economic sphere. After all, historical traditions and geographic proximity predetermine Austria's role as our natural trading partner.

A Record in 1985

[Question] How would you characterize the two countries' economic relations? What dominant characteristics are shaping our present economic cooperation? With special attention to the fact that the 1980's have not been an easy period for either country.

[Answer] In our trade with advanced capitalist countries, Austria ranks second among Hungary's trading partners. The turnover has grown more or less steadily in recent years. Both export and import have doubled since the beginning of the 1980's. Indeed, we achieved a record last year: Austrian statistics report a turnover of 17.5 billion schillings, which includes 8.5 billion schillings' worth of deliveries by Hungary, and 9.0 billion schillings' worth by Austria. Incidentally, a trade deficit for Hungary has long been typical of our mutual trade. The trade deficit's explanation must be sought partially in

traditions that are a century old: the export structure has remained essentially unchanged to this day. An important factor is that many Hungarian commodities exported in substantial volumes can be shipped advantageously to nearby countries, to Austria for instance, rather than to more distant markets. Therefore specifically Austria is the principal destination for many of our exported raw materials. Likewise decisive, although not economic factors, are the general affinity of the two countries and the already mentioned exemplary neighborly relations that act as the engine of cooperation. Of course, all this applies to the requirements as well as the results: we would like to see neighborly relations permeate increasingly our economic and trade relations.

The necessity of this happening is underscored by the fact that commodity trade has reached a critical stage in 1986. Both Hungarian export and Austrian deliveries have declined in the first half of this year. And unless both countries adopt effective measures to improve quality and the structure of trade, the gratifying developmental trend will be jeopardized and we can look forward to stagnation. For example, the trade-policy and other barriers hampering Hungarian export must be removed.

[Question] Could we examine first why Hungarian export has declined?

[Answer] Primarily because of the sharp drop in the prices of raw materials. The effects are also evident of Austria's trade-policy and other measures that are hampering deliveries.

#### Recovery From the Standstill

[Question] And to what can we attribute the decline in Austrian deliveries?

[Answer] The extremely successful hotel construction program, which had been going on for years and had been financed with Austrian loans, expired last year. The several excellent hotels built under this program in Hungary have become famous throughout Europe and the world. This program attractively increased Austrian export to our country during the past three or four years. And, to no small extent, it contributed toward the utilization of the Austrian construction industry's surplus capacity, while enhancing the industry's reputation. It will be interesting to note that the Austrian companies are now putting to good use also in other countries the experience that they gained in Hungary. In the construction of tourist facilities and commercial buildings in Bulgaria, Poland and the Soviet Union, for example.

[Question] In our country, I would imagine, there are many studies analyzing the ways in which we could achieve a breakthrough in the traditional trade turnover outlined above, and could recover from the standstill.

[Answer] I am glad that you brought this up. Hungary's rigid and obsolete export structure is a serious cause of the decline during the first half of this year. We could also call this our structural weakness, because we are exporting raw materials and sources of energy whose prices are at the mercy of the business cycle and subject to unpredictable fluctuations. The sharp decline of energy prices since last autumn, for example, has been a severe strain on Hungary's terms of trade. Materials, energy sources, chemicals and farm

products make up 82 percent of our export to Austria. The share of manufactures is 15 percent; that of machinery, not more than 3 percent! This structure is in conflict with our country's degree of economic development and its aspirations. Therefore we will remind our Austrian partners that, with such a structure, the long-term prospects of development are not good and the conditions of further progress are not ensured. In addition to the Hungarian economy's internal causes, we believe, certain external--namely, Austrian--conditions have also contributed toward this kind of structural rigidity.

[Question] What exactly does this mean?

[Answer] Today several Austrian trade-policy and administrative measures are hampering the importation of manufactured goods into Austria. We can prove this by pointing out that in our trade with the advanced capitalist countries whose level of economic development is the same as that of Austria (for example, with the FRG, the Netherlands, etc.) the share of manufactured goods and machinery is higher--twice higher--than within our export to Austria! Thus there are in Austria also domestic market conditions making it more difficult to sell Hungarian manufactured goods and machinery. Austria admits 85 percent of its import of industrial goods on terms more favorable than what apply to imports from Hungary. Imports from EEC and EFTA countries are admitted duty free; and imports from so-called developing countries, at half the regular duty. But we are treated the same way as the United States, Japan, Canada or New Zealand. Our real competitors are the developing countries. They are able to offer their goods essentially duty free or at lower duty. The Austrian duties on manufactured goods are high also in an absolute sense, and therefore Hungarian goods have to overcome a considerable tariff disadvantage in the Austrian market. This is why several of our manufactured goods have been squeezed out of trade with Austria. There are promises of long standing to resolve these problems. We are demanding preferential tariffs, the same treatment as other countries on our level of economic development are receiving.

#### Promising Opportunities

[Question] In spite of all this, I believe that our trade with Austria has good prospects and offers promising opportunities. Indeed, competent officials in both countries have established that the two economies have great reserves, and that it is in the interest of both Austria and Hungary to utilize these reserves.

[Answer] Put this way, you are right. We could work the ~~substance~~ of third countries fruitfully, by combining Hungarian and Austrian ~~exp~~ <sup>expertise</sup> and capacities in agriculture, ferrous metallurgy, and even in the production of heavy vehicles. In this last-mentioned field, for example, it is very interesting that to this day Austria and Hungary (Steyer and Raba) are competitors in the production of highway vehicles. Cooperation between them could be just as good as in the electric power industry, where Hungarian contracting enterprises are building the Bos [Gabcikovo]-Nagymaros hydroelectric power plant, with Austrian loans and cooperation. We see opportunities also in the chemical industry, pharmaceutical industry and biotechnology. The experts are already studying these fields, and there will be progress also here in the near future. There is imagination also in founding Hungarian-Austrian joint enterprises.



There are already ten joint firms, but only two of them are of a productive nature. In industry there could conceivably be joint production enterprises more meaningful than the VAEV-Bramac plant for the production of roofing tiles or the Bauer plant for the processing of feathers. We could conclude also cooperation agreements in industry. The existing 120 cooperation agreements may be regarded more as a start, rather than the end result. Production cooperation and coproduction could offer good business opportunities for Hungarian-Austrian enterprises not only in each other's markets, but in the markets of third countries as well. We are striving to utilize these favorable opportunities as fully as possible.

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ECONOMY

HUNGARY

#### OPERATION OF SMALL ENTERPRISES DESCRIBED

Budapest HETI VILAGGAZDASAG in Hungarian 14 Jul 86 pp 51-52

[Interview with Istvan Szebelledi, head of the Department of Domestic Partnerships within the Auditing Main Directorate of the Ministry of Finance, by Agnes Tibor: "Report on Small Businesses. Lumped Together"; date and place not given; first paragraph is HETI VILAGGAZDASAG introduction]

[Text] The Finance Ministry report analyzing the operation last year of unincorporated small businesses has been released. How did the audits rate the small businesses' operation last year? Do the findings warrant the increase, effective 1 June, of the compensation tax, the already controversial punitive tax [based on the compensation the small businesses get] that is payable by the economic units which contract with small businesses? These are the questions we asked in our interview with Istvan Szebelledi, head of the Department of Domestic Partnerships within the Auditing Main Directorate of the Ministry of Finance.

HVG: What does the experience which the Auditing Main Directorate gained last year reveal about the small entrepreneurs' work, results and aims?

I. Sz.: Far more businesses ceased in 1985 than in preceding years. According to our representative survey of 1,300 businesses, however, the surtax played only a negligible role in this. The number of new businesses formed was about the same as in years past, and therefore the net gain was smaller. The growth rate was the lowest for the number of enterprise workers' business partnerships. Proportionately more new businesses were formed in the provinces than in Budapest, and this again is a change in comparison with recent years. The operation of the partnerships in 1985 increased by 3.6 percent the productive working time available to society. The value of the unincorporated small businesses' output last year was 41.8 billion forints, 29.7 percent more than the year before. (At the macroeconomic level, the value of production increased by 3.6 percent.) The desire to earn more income was strong also last year, but there was more emphasis on income stability. Capital investment started to grow, and the assets of the partnerships increased by 34.9 percent last year. In 1985, the unincorporated small businesses paid the state budget 5.7 billion forints in various taxes and social-security contributions. (Payment of the compensation tax is not their responsibility; in 1985, this tax totaled 2.3 billion forints.) Among these small businesses, fulfillment of

the bookkeeping and accounting obligations in conjunction with the payment of taxes from gross income is improving, albeit slowly.

HVG: Do the findings warrant the increase of the compensation tax, which was much criticized already at the time of its introduction?

I. Sz.: The outflow of personal income into the economy last year was more than had been planned. According to the Auditing Main Directorate's recently completed analyses, a no small proportion of this additional outflow occurred through enterprise workers' business partnerships. These partnerships contributed 0.65 percent of the national economy's gross product last year, but their share of earned income was 4.2 percent. The members of enterprise workers' business partnerships received 66 forints of gross income from every 100 forints of gross output. In the case of work during regular hours, this ratio was 100:17 (based on income before deducting the contribution to the pension fund). There are two ways of limiting such earnings that are excessive in relation to output, and especially to work during regular hours: by administrative measures or by raising taxes. We have proposed the second alternative, assuming that administrative measures would curb the essentially capacity-supplementing activity of the enterprise workers' business partnerships. Hopefully the alternative we favor will compel the customer to engage the enterprise workers' business association only when this will be advantageous for the customer, in spite of the higher tax.

HVG: According to computations performed by the National Planning Office, the net or after-tax income of members of enterprise workers' business partnerships is unquestionably higher than that of the enterprise workers', but is far from being three times higher. Compensation commensurate with the earnings during regular hours may be warranted in the case of enterprise workers' business partnerships, but are incomprehensible in the case of independent businesses. Namely, their compensation is not merely pay for work performed, but also reward for the assumption of entrepreneurial risk. What is the reason of the equal treatment for these organizational forms?

I. Sz.: Orders from enterprises and cooperatives are eminently profitable in the operation of these businesses as well. If economic regulation is to adhere consistently to the principle that excessive payments by enterprises must be reduced, it has to apply this rule also to the amounts that may be paid to businesses outside the enterprises.

HVG: Even with the compensation tax, do these businesses produce enough to cover the incomes earned?

I. Sz.: They do. Their contribution to national income exceeds the amount of incomes earned. But the outflow of income is still a problem, because relatively the small businesses are contributing substantially less than the large enterprises toward society's collective expenditures.

HVG: An economic unit might remit excessive payments also to other enterprises or cooperatives, yet its orders from them are not penalized by a surtax. But let us go back to the original objections. Some people regard the compensation tax as inflationary, because it will eventually be reflected in the prices,

Some Typical Data of Unincorporated Domestic Partnerships (Small Businesses)  
on 31 December 1985. (Source: Ministry of Finance)

(6) Társaságok száma		(7) Változás 1984=100 %	(12) Társaságra jutó összes költségvetési előirányzat ezer forint		Változás 1984=100 %	
(1)	OMK	10 118	120,5	OMK	257,6	118
(2)	VOMK	21 153	114,4	VOMK	168,3	131
(3)	PJT	830	130,0	PJT	113,5	91
(4)	Spektróport	2 805	115,7	Spektróport	880,8	137
(5)	Összesen	34 906	120,1	Összesen	257,9	131,5

(8) Tagok összlétszáma fő		Változás 1984=100 %	(13) Főtagjelölésre jutó nettó jövedelme ezer forint/év		Változás 1984=100 %
OMK	55 436	120,4	OMK	97,3	105,8
VOMK	241 459	120,7	VOMK	—	—
PJT	2 265	127,6	PJT	48,0	109,8
Spektróport	97 573	114,0	Spektróport	85,6	117,4
Összesen	397 733	120,8	Összesen	88,2	113,2

(9) Főtagjelölésre jutó tagok száma		Változás 1984=100 %	(14) Kiegészítő termelést folytató tagok nettó jövedelme ezer forint/év		Változás 1984=100 %
OMK	14 064	128,6	OMK	54,3	100,7
VOMK	—	—	VOMK	36,8	103,2
PJT	1 280	131,7	PJT	21,0	94,0
Spektróport	30 699	112,4	Spektróport	34,9	101,0
Összesen	46 073	117,8	Összesen	28,4	102,9

(10) 1 társaságra jutó vagyon ezer forint		Változás 1984=100 %	(15) 1 tagra jutó jutt. jöv. adó ezer forint/év		Változás 1984=100 %
OMK	262,8	106,3	OMK	13,0	101,1
VOMK	69,4	92,4	VOMK	3,0	99,6
PJT	133,3	132,1	PJT	8,1	104,6
Spektróport	359,4	93,6	Spektróport	7,9	123,6
Összesen	165,2	100,4	Összesen	3,6	100,2

(11) 1 társaságra jutó árbevétele ezer forint		Változás 1984=100 %			
OMK	1 437,2	108,3			
VOMK	731,9	114,8			
PJT	1 724,2	133,7			
Spektróport	8 371,3	120,3			
Összesen	1 324,1	115,3			

Key:

- |  |   |
|--|---|
| 1. Business partnerships                     | 10. Assets per partnership, 1000 forints                          |
| 2. Enterprise workers' business partnerships | 11. Sales per partnership, 1000 forints                           |
| 3. Civil-law partnerships                    | 12. Total transfers to state budget per partnership, 1000 forints |
| 4. Specialized co-op groups                  | 13. Net income per full-time member, 1000 forints                 |
| 5. Jointly                                   | 14. Net income per part-time member, 1000 forints                 |
| 6. Number of partnerships                    | 15. General income tax per member, 1000 forints                   |
| 7. Index 1984 = 100                          |   |
| 8. Total number of members                   |   |
| 9. Full-time members                         |   |

directly or indirectly. Others hold that the damage to morale is greater than the financial benefit: the uncertainty compels the entrepreneurs to adopt a short-term approach. What is your opinion?

I. Sz.: The surtax increase might have a slight inflationary effect. This, unfortunately, cannot be excluded. Thanks to the present pricing regulations and to the rules of accounting with the state budget, however, this inflationary effect will not be significant. Concerning the second part of your question, I sincerely hope nobody will gain the impression that this measure is a step toward destroying small businesses. Perhaps you are right that economic regulation should have differentiated more closely between partnerships with practically no risks and the ones that are more entrepreneurial.

HVG: Measures of this kind are sometimes referred to as competition neutrality. How much additional tax increase would be necessary to reach that level?

I. Sz.: Were the state budget to collect as much revenue from small businesses as from large enterprises, there would be no small businesses. And this, as I have mentioned, is not our objective. To what extent the differences between the two types of economic regulation could be narrowed, and how, is an entirely different question. I am convinced that this question cannot be solved solely by regulating small businesses. After all, not even the present tax rates of the large enterprises can be maintained indefinitely.

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ECONOMY

ROMANIA

EQUAL DISTRIBUTION OF FORCES OF PRODUCTION SOUGHT

Bucharest REVISTA DE STATISTICA in Romanian No 4-5, Apr-May 86 pp 73-79

[Article by Alexandru Radocea and Constantin Marcu: "The Balanced Development of the Forces of Production Through the Country - A Fundamental Point in the Strategy of Building the New System in Our Country"]

[Excerpt] The process of eliminating the shortfalls in the development of the economic potential of certain regions and localities through the rational placement of the forces of production throughout the country has taken on the significance of a scientifically substantiated concept within the framework of the grand strategy of creating a vigorous, modern economy, especially since the Ninth Congress when comrade Nicolae Ceausescu was elected to head our party and state.

In carrying out the party's policy for the harmonious, balanced distribution of the forces of production throughout the country, first of all there are criteria of an economic nature that are organically integrated into the general priorities of development and correlated with those of a social nature, with those of a social nature even having a priority in some situations.

"We must learn to appropriately combine," pointed out comrade Nicolae Ceausescu, the secretary general of the party, "the considerations of economy and efficiency with those of a social nature - and which we must permanently keep in mind in establishing the distribution of the forces of production throughout the country. Certainly, it is possible that at a certain moment some economic calculations will show us that it is more efficient to build one enterprise or another within an existing center. But, if we also keep in mind the manpower and the need to stay within those regions and counties with the population, we will find that we need to sometimes give priority to social considerations."

The process of rationally placing the forces of production throughout the country and optimizing the economic structure of the counties was supported by a significant volume of investments, allotted primarily to the sphere of material production, with priority on the basic branches of the economy - industry and agriculture - which during the period 1966-1985 accounted for nearly two-thirds of the volume of investments made in the overall national economy.

The placement of certain important economic projects on the basis of priority in the lesser developed counties, regions and localities led to an increase in their

technical-material base, to the improvement of the distribution of the forces of production throughout the country and to the creation of certain equal working and living conditions for all the citizens of the country.

The construction of new industrial production and agro-zootechnical capacities, the development and modernization of existing ones and the construction of new social-cultural and administrative-public projects contributed to an increase in the value of fixed assets at the end of 1985 of approximately 2,780 billion, or five times greater than in 1965.

Through the policy of improving the distribution of the forces of production throughout the country, the fixed assets contributed to bringing the counties closer together with regards to production potential, with the grouping of the counties according to the volume of fixed assets being radically changed, as shown here:

Value of total fixed assets	Number of Counties	
	1965	1985*
Up to 20 billion lei	35	-
20.1 - 40 billion lei	5	19
40.1 - 60 billion lei	-	9
60.1 - 80 billion lei	-	6
80.1 - 100 billion lei	1	5
Over 100 billion lei	-	2

\*At the beginning of the year

Whereas in 1965 the value of fixed assets exceeded 40 billion lei only in Bucharest and five counties had fixed assets valued at 20-40 billion lei, while 35 counties did not exceed 20 billion lei, at the beginning of 1985 in nearly 54 percent of the counties the fixed assets exceeded 40 billion lei and 7 counties had fixed assets of over 80 billion lei (Arges, Brasov, Constanta, Galati, Hunedoara, Prahova and Bucharest Municipality).

The fundamental option of the Romanian Communist Party for intensifying the country's industrialization process has been an essential contribution to the development and consolidation of the counties' technical-material base and the growth of their economic potential.

Beginning with the requirements of socialist construction, industry has played a determining role in optimizing economic and social development both by branch and by distribution throughout the country, with positive effects upon the economic dynamism and balance of all regions and localities, upon the better use of material and human resources and upon the equalization of material and spiritual conditions for all the inhabitants of the country.

"The building of socialism and communism," comrade Nicolae Ceausescu points out, "requires lifting all the localities to a new level of life so that each will be able to lead a prosperous, independent activity in all the fields of social existence. And, the judicious placement of different industrial activities and the development of the forces of production in all the regions of the country move precisely in the direction of creating conditions for lifting all localities, all towns to a higher level of material and spiritual civilization."

The results of the efforts for industrialization have been expressed in the growth of the volume of industrial production during the period 1966-1985 at an annually rate of 9.5 percent. While the industrial production of the entire country increased during this period 6 times over, in 26 counties there were higher rates and in some counties - like Arges, Bistrita-Nasaud, Buzau, Galati, Iasi, Olt, Salaj, Tulcea, Vaslui and Vilcea - these increases were greater than 10 times over.

The harmonious distribution of industry throughout the country also resulted in an increase in the percentage of the counties' participation in achieving the country's industrial production, especially those counties that in the past had a lesser developed industrial base, such as: Arges (from 2.2 percent in 1965 to 4.7 percent in 1985), Bistrita-Nasaud (from .4 percent to .9 percent), Buzau (from .9 percent to 1.6 percent), Dimbovita (from 1.8 percent to 2.4 percent), Galati (from 1.9 percent to 3.1 percent), Gorj (from .8 percent to 1.4 percent), Olt (from .9 percent to 2.5 percent), Salaj (from .3 percent to 1 percent), Teleorman (from .9 percent to 1.2 percent) and Vilcea (from .8 percent to 1.5 percent).

The favorable evolution in the development of the industrial potential of the counties is also shown by grouping them according to the level of industrial production:

Value of Industrial Production	Number of Counties	
	1965	1985
Up to 5 billion lei	29	-
5.1 - 10 billion lei	7	2
10.1 - 25 billion lei	4	19
25.1 - 50 billion lei	1	14
50.1 - 75 billion lei	-	4
Over 75 billion lei	-	2

A qualitative aspect of the process for industrialization and improvement of the territorial distribution also was the variety diversification of production, the better use of natural resources and manpower, the efficient use of transportation means and the creation of the most advantageous economic configuration in relation to local conditions and the country's progress.

Thus, the metallurgical industry was expanded in these counties: Galati, Calarasi, Teleorman and Tulcea; the tractor building industry in these counties: Harghita, Dolj and Timis; the bearings industry in: Vaslui and Teleorman; the electronics and electrotechnical industry in: Arges, Bistrita-Nasaud, Bihor, Botosani, Buzau, Covasna, Ialomita, Iasi, Mures and Vaslui; the petrochemical industry in: Arges, Bihor and Constanta; the chemical fertilizer industry in: Arad, Bacau, Braila, Dolj, Iasi, Tulcea and Vilcea; and so forth.

Paralleling the development of industry, agriculture recorded significant progress in the last 2 decades, both overall and by counties.

During the 1966-1985 period, important investment funds were allocated for the development and improvement of the technical-material base of agriculture, funds which totalled approximately 440 billion lei (in the prices of the respective years), representing approximately 14 percent of total investments for the economy.

The investments allocated to agriculture contributed to increasing the fixed assets in this branch, which, at the beginning of 1985, represented over 250 billion lei, being more than 10 times greater than those existing in 1965. For fixed assets the increases were much higher than the national average in these counties: Arges, Bacau, Braila, Dimbovita, Dolj, Gorj, Hunedoara, Iasi, Maramures, Mehedinti, Prahova, Vilcea, Vrancea and Bucharest Municipality.

It also seems a significant fact that whereas in 1938 there were in the entire country approximately 4,000 tractors, currently more than half of the country's counties each have over 4,000 tractors.

A natural result of the party's consistent policy to create a high output agriculture capable of offering increased amounts of sure and stable production through an increase in the land's production potential has been the expansion of the land area under irrigation. Those counties with the largest land areas under irrigation at the end of 1985 were: Constanta (393,700 hectares), Calarasi (307,500 hectares), Braila (279,600 hectares), Dolj (256,100 hectares), Teleorman (240,500 hectares), Ialomita (186,600 hectares) and Giurgiu (163,700 hectares).

The expansion of the irrigated cultivated land areas, the use of seeds from superior biological categories, the judicious use of chemical and natural fertilizers, the better placement of crops and the increase in the size of animal herds and animal production contributed to growth in total agricultural production in 1984 (despite unfavorable climatic conditions), which was 2.2 times greater than in 1965. During this period, half of the counties in the country had increases greater than the national average, with 12 counties recording increases above 2.5 times greater: Arges (2.6); Caras-Severin (2.7), Dimbovita (3.2), Dolj (2.52), Gorj (2.8), Iasi (2.8), Olt (3.3), Prahova (2.8), Suceava (2.7), Timis (2.51), Vilcea (2.6) and Bucharest Municipality (3).

The changes that have taken place in the growth of agricultural production also stem from the following grouping of counties according to the value of total agricultural production:

Value of Total Agricultural Production	Number of Counties	
	1965	1984
Up to 2 billion lei	13	-
2.1 - 4 billion lei	26	12
4.1 - 6 billion lei	2	18
Over 6 billion lei	-	11

The balanced, harmonious development of the forces of production throughout the country, a premise for achieving economic democracy and an essential component of socialist democracy, had as a result the growth of economic activities and the more efficient use of material resources and manpower.

The growth in economic potential is clearly shown in the changes that have taken place in the grouping of the counties according to the total volume of economic activities:

Total Volume of Economic Activities	Number of Counties	
	1965	1984
Up to 10 billion lei	21	-
10.1 - 20 billion lei	17	2
20.1 - 40 billion lei	2	16
40.1 - 60 billion lei	1	12
60.1 - 80 billion lei	-	6
Over 80 billion lei	-	5

The socialist industrialization of the country and the development and modernization of agriculture and the other branches of the national economy brought about important structural changes in the economy, as well as a series of quantitative and qualitative changes in the structure of the employed population.

Economic homogenization brought about by the rational placement of the forces of production throughout the country is also reflected in the growth of the percentage of the population employed in industry and the other non-agricultural branches, concomitantly with the reduction of the population employed in



agriculture - fundamental characteristics of the socio-professional changes in the structure of the population. During the period 1965-1984, the percentage of the population employed in the non-agricultural sectors within the total amount of employed persons increased from 43.5 percent to 71.1 percent, while at the same time the percentage of the population employed in agriculture fell from 56.5 percent to 28.9 percent.

In 1985, the number of workers was 7,661,000 persons, being 1.8 times greater than in 1965. One can show the fact that in Bistrita-Nasaud, Botosani, Buzau, Covasna, Dimbovita, Giurgiu, Gorj, Olt, Salaj and Vilcea counties the number of workers practically increased from 2 times greater to 3 times greater during the 1965-1985 period. This led to a more balanced distribution of the forces of production of society - manpower - throughout the country, as reflected in the changes that took place in grouping the counties according to the average number of workers per 1,000 inhabitants:

Average Number of Workers per 1,000 Inhabitants	Number of Counties	
	1965	1985
Up to 100 persons	2	-
101 - 150 persons	8	-
151 - 200 persons	15	-
201 - 250 persons	9	5
251 - 300 persons	5	13
301 - 350 persons	2	11
Over 350 persons	2	12

Whereas in 1965 in 32 counties the number of workers per 1,000 inhabitants did not exceed 250 persons (with 10 counties being below 150), in 1985 the number of counties recorded at that level had been reduced to 5, while 23 counties had over 300 workers per 1,000 inhabitants compared to only 4 in 1965.

In close connection with the results of production activities and with the development of the forces of production, there also was an improvement in the workers' working and living conditions and their standard of living, the supreme goal of our party's policies.

"In the center of the general policy of the party and the state," it points out in the Program of the Romanian Communist Party, "of building a multilaterally developed socialist society and of advancing towards communism, there will always be man - the essential factor of all economic and social development - and the full satisfaction of his continually growing and diversifying requirements for life, the unlimited affirmation of the human personality."

The development of the forces of production and their harmonious and balanced distribution throughout the country continues to remain a strategic basic point, with the 13th Congress of the party establishing new and important objectives for this area, whose fulfillment will ensure better and better working and living conditions for all the citizens of the country and the movement of all regions and localities of our country onto new levels of civilization and progress.

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ECONOMY

ROMANIA

## RESPECT OF REGULATIONS ON MERCHANT SHIPS URGED

Bucharest LUPTA CFR in Romanian 8 Feb 86 p 4

[Article by Gheorghe Iurascu, Chief Inspector of Civil Navigation: "Complete Navigation Safety - A High Duty of All Personnel in Maritime and Riverine Transport"]

[Text] The impressive development and modernization of our maritime and riverine fleets are at the top of the great achievements that have been made by our people during the epoch of incomparable creative productiveness inaugurated by the Ninth RCP Congress. At the initiative of and direction of the secretary general of our party and president of the Republic, comrade Nicolae Ceausescu, a powerful Romanian ship industry was thus created, capable of equipping the commercial fleet with modern ships of all types and categories corresponding to the constantly growing transport requirements, ships equipped with navigation equipment and devices of a high technical level. The consistent carrying out of the programs outlined by the party and state leadership and recorded in the five year plans allowed the Romanian fleet to be alongside the prestigious fleets in the world and our maritime and river ports to reach a high level of mechanization and equipment.

Under such conditions, it is in itself understood that our navigation personnel and the workers in the port traffic enterprises have tasks of great responsibility to use the modern ship and installation resources with high efficiency and at full capacity so that the material efforts made by our people through significant investments that were made from year to year and from five year plan to five year plan will be repaid through even greater contributions to the multilateral prosperity and flourishing of the socialist nation. Our fleet is being asked to an ever greater degree to provide for the movement of goods in import and export activities.

The intensive use of the fleet, that is, its use at full capacity, the reduction of idle time during loading and unloading operations, and the maintenance of ships in a permanent and perfect state of operation are unconditionally linked to the strict adherence to navigation regulations, the on-board service regulations and the other norms and standards in effect, or, in other words, at an exemplary disciplinary status for shipboard personnel. This is even more necessary for our ships - themselves a valuable asset - since they carry important cargoes belonging to the people. Both at sea and in port, any act of negligence or violation of instructional standards - even those that seem more insignificant - can have among the most serious consequences.

It must be stated right from the beginning that due to the intense political-educational work carried out by the party organizations, under their leadership, in the trade union organizations and the Union of Communist Youth organizations and the sustained concern for the thorough seaman's and specialized training and for the continuing improvement of this professional training, the state of discipline and competency of our maritime and river ship crews have been constantly improved. There are numerous cases where our crews have had to face especially difficult situations and come through them successfully, working in perfect order and discipline and showing a seaman's courage and sacrifice and a responsibility towards the ship and the goods entrusted to them for transport. Not just once have the crews of Romanian ships collected the praise from abroad for the knowledge with which they proceeded under difficult circumstances or for the quick and efficient assistance given to other ships in difficulty.

Contrary to these deeds and the devoted and conscientious work of the great majority of our ship personnel, there are violations by certain personnel which cast a shadow over the activities of all personnel. Thus, unfortunately there are frequent cases where alcoholic beverages are consumed on-board, even though this is strictly prohibited, with the consumption of alcoholic beverages constituting a serious danger for the safety of the ship. Last year, the organs of the Inspectorate of Civil Navigation alone ordered the removal of 13 personnel for such violations of order and discipline. It should be noted that among these were precisely those persons who, first of all, had the mission to oversee the precise adherence to orders and regulations. Among others put ashore and turned over to the enterprises were river captain Stanica Serea, Vasile Neculai, the chief mechanic of the tug N.R. Dolj, and crew chiefs Ion Ciuca and Anton Iliescu.

Any ship can be compared to a factory because of the complex installations existing inside it. It is understood, therefore, that even during times when it is tied up it must be supervised with the same care and responsibility. And, unfortunately there are cases frequently when safety personnel or duty personnel are not placed aboard the ship. Last year, for example, the organs of the Inspectorate for Navigation found no less than 407 cases where duty personnel were missing from ships (281 from the Romanian Maritime and River Navigation agency and 126 cases for ships belonging to other enterprises), as well as 8 boats, 7 river boats and one maritime ship where safety personnel were missing, sometimes for days on end. Beginning with the same comparison with a factory, it is easy to understand why it is strictly prohibited to give foreign persons access to board ships. There were situations on board ships where persons far removed from the ranks of the ships' crews were apprehended for disciplinary violations - persons who caused significant damage. The fact that last year the organs of the Inspectorate of Navigation uncovered 82 such situations, immediately taking the appropriate actions, must give the ship owners, the enterprises, something to think about.

Because of negligence or misunderstanding, inappropriate electrical devices were used capable of starting fires. And, each crewmember knows what it means for a ship to have even the start of a fire. For that reason the strict adherence

to the standards concerning the prevention of fires on-board ships is much more than an obligation for each member of the crew.

The conditions under which a crewmember carries out his work in this sector make it necessary for there to be no violations, large or small. The smallest bit of negligence or violation of service duties, regulations or instructions can have among the most serious consequences, placing the ship and crew in danger. The investigations undertaken by us have thus shown that a series of collisions or damage suffered to ships in port and at sea have as their basis most of the time aspects that are insignificant at first glance. Our ships, actually, are equipped with some of the most modern navigation and safety devices having a high degree of technology. It should be stressed, however, that all this technology is nothing more than an auxiliary to the person, merely an instrument to help him in his work. The main factor is the man, with his high awareness and his developed feeling of responsibility towards the immense goods entrusted to him.

Precisely for that reason the party and state leadership have repeatedly stressed the strict necessity to impart to our commercial maritime and river navigation a climate of complete order and discipline without any type of cracks. In this regard, sustained work must continue to be carried out in all aspects.

The organs of the Inspectorate of Civil Navigation, the Central apparatus and the port masters offices are working along the same lines in the spirit of the rights and duties conferred by law, overseeing the safety of the ships and the adherence to the orders, regulations and laws of the country concerning navigation in territorial waters. Last year, findings were completed and penalties were issued for polluting the waters in the port of Constanta against five Romanian ships and another five ships under foreign flags. Similarly, over 800 reports were forwarded to enterprises owning Romanian ships regarding violations by shipboard personnel of orders and regulations. We are working in this regard with special exigency, showing it first of all with regards to our own personnel. Thus, last year from among the ranks of the river portmasters' offices we removed seven persons who did not carry out their service duties and obligations in the spirit of orders and regulations and who overlooked violations of these orders on the part on ship personnel or did not report them on a timely basis in order to prevent navigation problems.

At the same time, it must be stressed that strengthening order and discipline on board ships and the safety of navigation is not an exclusive attribute of the organs of the Inspectorate of Navigation. They are, first of all, the obligation of the management of the enterprises, the ship commanders and the compartment chiefs on-board each ship. This firm requirement must be expressed right from recruitment and enrollment of personnel, with only people having a thorough professional training and an irreproachable ethical and moral behavior being able to work in sailing. Similarly, it is necessary to ensure a permanent and thorough activity to update professional knowledge and to thoroughly understand orders and regulations. Let us work with full



responsibility and exigency so that the spirit of order and discipline and high professionalism will be a general and defining characteristic for all our shipboard personnel, ready at any moment to fulfill the mission entrusted to them by their country in an exemplary manner.

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ECONOMY

ROMANIA

## INDUSTRIAL PRODUCTION IN RESEARCH INSTITUTES EXAMINED

Bucharest REVISTA ECONOMICA in Romanian No 21 23 May 86, pp 14-15

[Article by Sorin V. Stan of the Central Institute for Machine-Building: "Specifics of Industrial Production in Research Institutes"]

[Text] The growth and diversification of industrial production that is done within the framework of research institutes constitute a basic orientation, one having a broad opening over time, that is harmoniously integrated in the party's policy of a sustained and efficient promotion of the technical-scientific revolution at the level of the entire national economy. It is a significant fact that this option responds to certain multiple requirements: meeting certain needs for machinery, equipment and complex industrial products; reducing imports, increasing the quality of the solutions offered by research through the creation of the technical-material framework for the practical testing of these items, and harmoniously integrating them into production.

The institutes for scientific research and technological engineering within the framework of the machine-building branches - through the volume and specific nature of their activities - are fully involved in this effort. On the occasions of the working visits of the top party leadership mobilizing tasks were outlined regarding the growth and diversification of the industrial production belonging to research units, to which end programs were drawn up in each institute that summarize the most important courses of action.

As a component part of the production that is carried out with a contribution from the units involved in scientific research, technological engineering and design work, the industrial production activities that are done in the machine-building institutes have experienced in recent years a remarkable evolution both from a value point of view and from variety produced. Thus, in 1985 the volume of industrial production was approximately 2.5 times greater than in 1980. At the same time, within the total volume of production there was an increase in the percentage of prototypes, experimental models and special technological equipment and installations, correspondingly decreasing the percentage of small-series products.

The industrial production of the institutes has developed at sustained rates due to the growing contribution of these activities to the resolution of the priority tasks for the machine-building industry: the growth in the degree of updating

production, the reduction of material production costs and manpower costs, the reduction in the levels of consumption of raw materials, materials, energy and fuels, the decrease in the amount of imports of machinery, equipment and materials, and the growth of exports. Since the fundamental purpose of these activities is the better use of the immediate results of research and technological engineering in their own institutes, significant industrial production capacities were created and developed in all these units in the branch. Currently, these activities are producing a wide range of machinery, installations, test stands and highly complex technological lines. Here are several representative examples: models and prototypes of wheeled and tracked agricultural tractors, trucks, dump trucks, tractors, automobiles, off-road vehicles, utility vehicles and so forth; electrochemical separating equipment, automated installations for electrochemical treatments, portal-type equipment for the automated welding ship plates to framework and other types of combined technology equipment; control stands and devices (stands for testing and breaking-in thermal motors, mobile stands for testing exhaust systems on tractors, a device for controlling the noise of bearings); small-series production products (high pressure painting equipment, a 50 kilowatt power group operating on biogas, and so forth).

#### Elements That Differentiate the Production

The expansion and diversification of industrial production in the institutes in accordance with the tasks that are outlined in the drawn-up plans must be accompanied, in our opinion, by a series of improvements in the economic mechanism which supports and directs this activity. The aspects we have in mind begin precisely with the specifics of the industrial production belonging to the research units, specifics which, furthermore, are dependent upon the type of products made and the technical-organizational conditions of production.

Within this framework, we have in mind the broad diversity and great flexibility of production, with effects upon the manner of drawing up the plan with regards to the physical listing of production and the parceling out of the annual plan figures by quarters and months. Similarly, the annual production capacity cannot be precisely evaluated on the basis of the methods used in industry because of the increased percentage of prototypes and combined technologies whose production - as is known - requires numerous operations involving tests, experiments, disassembly, redesign and so forth, steps whose detailed planning is difficult. Finally, we must keep in mind that the level of labor productivity is objectively lower compared to industrial production in series runs (according to some estimates by approximately 40 percent). This situation occurs because of both the specific nature of work in the industrial production in the institutes (small-series production, the new nature of many of the products) and the fact that the prices of the products made in the institutes do not also include the allowance of a portion of the net production for society, while the profits are planned on the basis of a smaller profitability rate compared to that used in the industrial enterprises of the branch.

#### Actions to Improve Economic Indicators

Starting with these findings and with the ever more important role of this type of industrial production in the process of integrating research with

with production, of increasing the degree of flexibility and adaptability of industry to the requirements of the economy and of eliminating to a greater degree imports and starting production in-country on various types and sizes of new items, we have followed on the level of machine-building the manner in which a series of economic and financial regulations have been adapted to the specific conditions of these activities, which we discussed earlier. We found that in these activities there are still certain shortcomings in the organization, planning and evaluation of industrial production at the level of the institutes for scientific research and technological engineering. In this regard, beginning with the accumulated experiences, we feel that some of the actions to improve economic indicators for evaluating production involve the following aspects:

- The establishment of optimum limits to the development of industrial production in each institute and the percentage of this production in the total volume of activities. In 1985, for example, the percentage of industrial goods production in the total volume of institute activities was approximately 40 percent, but the differences from one research unit to the next were considerable - between 3 percent at the Center for Scientific Research and Technological Engineering for Bearings and Assemblies at Brasov and 56 percent at the Institute for Scientific Research and Technological Engineering for the Machine-Building Industry in Bucharest. The establishment of an optimum level for these percentages for each institute so that overall they will attain the planned levels must be the result of detailed analysis and correlation of a number of factors: the content of the scientific research and technological engineering plans which give the production tasks for prototypes, experimental models, combined equipment and installations and so forth; the status of the existing material base in their own production sections, as well as the number, structure and level of training of the production personnel; the correct estimate of the evolution of material costs (especially for subassemblies acquired from other economic units) under conditions where production is dissimilar and very flexible.

On the basis of such analyses, we are of the opinion that in order to increase the contribution of these activities in reducing imports through the production of a greater number of products and technologies of our own design, we can substantiate decisions concerning the economic opportunity of transferring small-scale production to industrial enterprises, while, in other situations the percentage of production in the institutes can rise so that the total number of institutes in the Ministry of the Machine-Building Industry can be within 40 percent of the total volume of activities. Under these conditions of improving the mechanism for transfer between research and production we ensure at the same time the active penetration of the most significant achievements of our national research into the sphere of series production and the freeing-up of certain production capacities at the institute level, with this having positive effects upon increasing the rate of promoting technical progress, on one hand, and upon the plan of increasing the efficiency of the updating process on the other hand.

- The clear definition of this sphere of activities and the identification of the places in which industrial production can be carried out in research institutes

represent, in our opinion, another important aspect. In this regard, it seems necessary to complete certain instructions which will outline in detail, depending upon the specific nature of each branch, the categories of projects that can be included in the institutes' industrial production. Similarly, in cases where a research unit does not have production capacity in relation to the assigned research themes, we can take into consideration the possibilities of carrying out these activities in spaces available in enterprises (and using their equipment) that have been made available to the research units, eventually on the basis of well-defined contracts.

Here is another significant aspect that has been revealed in current activities: the need to judiciously correlate the value plan (the value of the industrial goods production) with the two main indicators and the resulting influences - the increase in the number of effectively employed workers and the increase in their labor productivity. In referring to the number of workers, it is currently felt that there is a need to have a distinct listing of the number of workers employed in industrial production given the fact that currently the institutes are using as plan figures the average annual number of workers for all their activities (scientific research, technological engineering and industrial production) without a distinct breakdown of the total figures into three categories.

On the basis of the above-mentioned elements, it would be useful and possible in the sense of the methodology of planning to establish new indicators for this type of industrial production: the level of labor productivity as calculated as a relationship between goods production and the average number of existing workers in this activity. By planning with these two indicators one can establish the value plan for industrial production on more judicious bases. Similarly, the need has become clear to evaluate - according to specific criteria - the possibilities for increasing labor productivity in the industrial production of the institutes, which, as we have pointed out, can no longer increase at the same rate as that in high series production in industry. This fact is precisely due to the special nature of the work process in the production sections and shops in the institutes.

- The analysis of the opportunities for maintaining a smaller rate of profitability for all categories of products in industrial production compared to those in the industrial enterprises in the branch constitutes, for its part, an especially important economic and financial element. Under conditions where the production in the institutes has a greater role in diminishing the amount of imports through the production of certain small-series run production, it is necessary for this category of products to have a larger profit rate than the one used in the cases of prototypes and combined installations.

Perhaps to a greater degree than in industry because of the vanguard nature of research and technological engineering, the growth and diversification of the structure of industrial production in research institutes - in accordance with current and future tasks - require periodically and concomitantly with the improvement of the forms and methods of planning an improvement in the system of economic and financial indicators, including those which reflect different



facets of economic efficiency in the activities of scientific research and technological engineering. A real contribution for unifying the manner of planning and evaluating the contribution of industrial production to the development of our own research in institutes can also be made by the drawing-up of a general methodology that will deal with all the economic problems involved in carrying out these activities in a unified manner with regards to content, sphere, role, structure, economic-financial indicators, limits, effects and so forth.

8724

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ECONOMY

YUGOSLAVIA

# LAG IN DEVELOPMENT, USE OF ROBOTS IN INDUSTRY DISCUSSED

Belgrade KOMUNIST in Serbo-Croatian 18 Jul 86 pp 13-14

[Article by Miodrag Stojilovic: "A Metal Hand Is Knocking on the Door"]

[Excerpts] Robots have entered Yugoslav industry in a big way--to be sure, only on paper. In reflecting on the future, our planners foresaw at the beginning of the last medium-term period that we would be entering this one with nearly 100 robots. The predictions were not borne out, as we have now seen.

Where is Yugoslavia today with respect to robotics and automation? The answer is neither simple nor unambiguous.

## The World Is Learning From Us

The world is learning about robots from the books of our authors! One of the best-known world publishers, Springer Verlag, whose letterhead reads Berlin, Heidelberg, New York, Tokyo--which inter alia signifies that the books are published in German, English, and Japanese, published six books between 1982 and 1985 comprising the world's only series of monographs on robots, and they were written by Miodir Vukobratovic, Dragan Stokic, Veljko Potkonjak, Manja Kircanski, and Nenad Kircanski--our own scientists at the "Mihailo Pupin" Institute in Belgrade. This series will be completed with another four books now being prepared. This project is being supervised by Dr Miodir Vukobratovic, professor and member of the academy, who heads the Department for Robotics of the "Mihailo Pupin" Institute and has a world reputation in this field. Professor Vukobratovic is torn between his scientific work, civic activity (in order to obtain broader support and verification for this work), and travel around the world--he is in demand everywhere, but he very soon found a "hole" in the schedule of his daily obligations to give an interview to KOMUNIST.

"It is true, the world is learning from our books: the Russians, Europe, China, Japan, America. Our software packages for controlling robots are being purchased by the entire world, but there are no robots of ours in that world. I see the cause of this in the area of social organization. With respect to the scientific potential we possess, we might build five world-class robots ourselves or in collaboration with Japan and America. There are two reasons why we are not doing this: industry is not organized for that job on the one hand, while on the other the social mechanisms have not brought about the pre-conditions for something like that."

Dr Slobodan Smiljanic, chairman of the Federal Committee for Implementing the Strategy of Yugoslavia's Technological Development and chairman of the Federation of Science Communities of Yugoslavia, who is also vice chairman of the Business Board of the "Crvena Zastava" Plants responsible for development, also agrees with these assessments.

"When we speak about our ability and knowledge in the field of robotics, we must be aware that one goes through several phases to get to robots: calculation, design, construction, laboratory testing, and application. If we are at the world level in the first phase, we are not up to that level in the very next phase of design, and when it comes to production we are at the bottom. Robots are not made in institutes, but in industry. A few centers have emerged which are capable of taking the job to the end, of producing robots on a sizable scale, rather than just making one to be photographed 20 times for television and the newspapers. If we knew how to accomplish the division of labor, how to organize ourselves, we would have robots."

The explorations for the Yugoslav robot have been fragmented and splintered. In Serbia this work is the concern of the "Mihailo Pupin" Institute in collaboration with "Prva Petoljetka" of Trstenik and "Teleoptika" of Zemun and the "Ivo Lola Ribar" Industry of Zelenik, with the help of the Manufacturing Machinery Unit of the School of Mechanical Engineering at Belgrade University. People at several points in Slovenia are engaged in research in the field of robotics in Slovenia: "Gorenje Veriga" in Lesce, the "Joze Stefan" Institute and School of Electrical Engineering at Ljubljana University, "Iskra" in Kranj, and the Junior Postsecondary Technical School in Maribor. In Bosnia-Herzegovina this work is being done in "Energoinvest" and the Zenica Mining and Metallurgical Combine, while "Onis" has displayed certain ambitions, in Macedonia it is done by the "Tito" Metal Plant in Skoplje, and in Croatia the organization of this effort is still in diapers. It is clear that under those conditions of fragmented and uncoordinated work forces are squandered, unnecessary efforts are expended, and the entire job takes longer and goes more slowly. "All of us together might be able to do something, this way we do not represent any serious scientific potential, and the social mechanisms which do not see the danger of autarkic development and do not prevent it bear the blame for that," runs the opinion of Professor Vukobratovic. He believes in the constructive coercion of government agencies that would bring together all the forces and he feels that the effort should be divided up so that everyone furnishes his maximum within his field of competence. Someone would concentrate on the robots, someone on automated machine tools, someone on broader technical production lines.

Nevertheless, it does seem that there are certain positive signs. All the current potential--the "Mihailo Pupin" Institute, "Ivo Lola Ribar," "Prva Petoljetka," the School of Mechanical Engineering at Belgrade University, and also Electronics Industry of Sis, which is to work on the program of the robots' control system, will be brought together on the robotization project through the Serbian SIZ for Science. The meeting at the level of Yugoslavia, which has been initiated in the Federation of Science Communities, represents one step further. A good sign with respect to the unification of our potential is the meeting at the initiative of the SIZ's for science in the

framework of the Working Group for Coordination and Agreement on Division of Labor in the Production of Robots and Components--JUROB. Robotization is one of the 11 projects adopted as Yugoslav projects, and the preparation of the project assignment has been entrusted to the Slovenian SIZ for Research.

However much science has been attempting to link up, industry has not been doing anything. Slobodan Smiljanic feels that the transition ought to be made from the situation of "everyone doing everything" to the situation of "each one doing something," which is far more meaningful and fruitful, adding that the Economic Chamber of Yugoslavia ought to organize an agreement on the division of labor. It is easier to do that job now, Smiljanic says, since it would be much more difficult if the interests of the United States, Japan, and West Germany become intertwined in our region concerning this field as well, as has been the case in certain others. The responsibility for that lies with business executives who cannot give the excuse that politicians are setting up obstacles for them, when there is nothing standing in their way of reaching an agreement, and they can even look to science as a predecessor which has cleared many possible political-ideological mines from the field.

What do we want in the field of robotics?

#### Selectivity Is Indispensable

On the one hand exactly what we have described: for us to organize and become capable of manufacturing a domestic robot. At the same time we should not look only to our own needs. Small countries like Norway, Sweden, or Bulgaria have been manufacturing robots in much larger quantities than they needed and have been marketing them successfully in the world. On the basis of everything we have said we also have the capabilities for that. Prof Miodir Vukobratovic has this to say on that point:

"To be successful we must be selective in our programs--we cannot do everything that the advanced world has. The material capabilities, the capacities in place, the equipment, and the personnel indicate that we can count on success only if we narrow the number of directions of our future effort."

The personnel potential can be considered one of our advantages in this area. This is confirmed by Academician Vukobratovic, but at the same time he warns: "We have built a solid personnel potential, but at the same time we are also losing it easily. Unless something changes here, we face a disaster. We are losing personnel since we are unable to open up prospects for development to the highest-quality young people here and satisfy their ambitions to improve themselves as scientists and to display their abilities. People are not leaving only because of financial reasons, but because of dissatisfaction with the work they are doing or not doing. A majority of the able young people are figuring out ways of going to the West before they complete their university studies. I hear from people in America who just before they got their degrees went off there and became PhD's at well-known universities at the age of 26 or 27, including quite a few who are working precisely in the field of robotics. They do not want to come back, since the plundering of the scientific research potential has begun in our country in a big way. A major portion of what the

institutes do is no longer research work; the institutes have been turned into design organizations. One way to turn these trends around is to form new institutes outside the existing ones and outside the economy, since today the economy confronts the question of elementary survival and it cannot reflect all that seriously about the future. In SR Serbia, for instance, two institutes would be enough--one for the natural sciences and mathematics and one for the engineering and technological sciences, each with a staff of 60 or 70. Those institutes would not cost more than 1 billion old dinars a year, once they were equipped, which is a pittance to pay for retaining and developing a new scientific potential that would be made up of the most able young people. We spend 10 times more than that on pointless efforts, giving our money according to criteria which do not yield any result whatsoever. We must be aware of that, since it is the 11th hour for us to find the energies to organize this important undertaking and to emerge from the condition of scientific, technological, and educational neglect on the eve of the technological rebirth that is anticipated."

Another line of activity is the robotization of our industry. As we have said, there have been plans, but they have not been fulfilled. Given our ever greater orientation toward exports and the need to be competitive in quality and price on the world market, we have to keep pace with the world in technology as well. Perhaps the motor vehicle industry is the best example for comparison. And while more than 5,000 robots are operating in the American automotive industry, the first has yet to go into operation in our own. This is a robot which will not be installed in the automotive plant, but in the foundry of the "Metalurgija" Work Organization of the "Crvena Zastava" Plants. It might be said that its existence is a pure accident. The regional self-managed community of interest for disability and old-age insurance awarded "Metalurgija" certain funds intended for workplace health and safety. Someone in that collective said in response: "Let's introduce a robot," and the suggestion was adopted. The work was given to the "Mihailo Pupin" Institute, which did the computations and the design, and "Prva Petaljetka" of Trstenik made the robot. This is the LMS-4 robot, or industrial manipulator, which with a delay of several months was nevertheless completed last fall, but it is still sitting in Trstenik, since the rotary gas furnace beside which it will operate had to undergo reconstruction, and that meant waiting for certain imported parts. The committee to celebrate this first robot has been riding its hobby horse for almost a year now waiting to promote the beginning of the robot era in Yugoslavia's giant of the automobile industry.

"The forging shop and foundry which are part of our work organization have the most difficult working conditions, the workers are exposed to physical stresses, pollutants, and noise, so that the introduction of robots in our case contributes to the humanization of labor," says Radomir Stankovic, MA, director of the Sector for Development and Technical Affairs of the "Metalurgija" Work Organization.

#### From an Accident to a Strategy

If this first robot is being introduced in "Crvena Zastava" thanks to a coincidence of circumstances, if not exactly by accident, this does not by any



means signify that that collective does not have a plan for robotization and automation of production. One such program, related to production of the "Yugo" automobile, was presented to the public last fall at the HIB conference on production machinery of Yugoslavia held in Kragujevac. That document states that by 1987, in the first phase, 23 robots will be installed in the "Body" OOUR, and then the number will be increased to about 70 or 80 toward the end of this decade. Electromechanical robots have been chosen with six degrees of freedom of movement, with a load capacity of 60 and 90 kg, and they will have the capability of rapid automatic replacement of welding clamps. Their competitors are robots of a sizable number of world manufacturers: ASEA (Sweden), COMAU (Italy), RENAULT (France), KUKA (West Germany), SCIAXY (France), and others. The important thing, however, is what follows this in the program: "The designers of the 'Crvena Zastava' Plants anticipate in particular that domestic manufacturers will be able to produce robots for our needs. In that sense 'Zastava' has in recent years been developing cooperation more and more with the 'Ivo Lola Ribar' Industry in Zeleznik and the 'Mihailo Pupin' Institute in Belgrade."

"Ivo Lola Ribar" is already making the first four robots which will be installed on an experimental basis in "Zastava," for the job of spot-welding the body. We say on an experimental basis, since they will be set up alongside the existing equipment. The purpose, according to Dr Slobodan Smiljanic, is to check the reliability of the construction of the domestic robots and for the workers, technicians, and engineers to become accustomed to the robots from the standpoint of maintenance, but also the quality of the operations which come ahead of the job which the robots will be doing. That is, the robots are not forgiving, and they are unable to tolerate mistakes in the previous work process.

Afterward, when the output of "Yugo's" is increased to 160,000 units a year, the plans call for introducing 9 new robots in "Zastava's" "Body" OOUR, on the line where the floor is welded. This will be a completely robotized area, the first big test and the first big trial--a test of group operation of robots. This will require a continuous supply of high-quality stampings within narrow tolerances of divergence from the design specifications and then quality programming and maintenance of the robots, improving the technical sophistication of the people who will be attending this line so that they are protected against possible injuries, since robots may also be dangerous. They do not tolerate a lack of work discipline or technological discipline. The next phase is to extend the use of robots to several lines during 1988 and 1989 up to the number of 70. In that period electromechanical robots will be installed solely for technological operations, and the purpose is to achieve satisfactory quality on a steady basis. After 1990 robots are also to be introduced at "Zastava" for manipulative jobs, and it is then that the moment would be marked for entry into the age of automation.

In the world, especially in the West, of course, the trade unions do not have a favorable attitude toward robotization and automation of production, since as a rule it means laying off manpower. What is the social aspect of introducing robots into our industry? Professor Vukobratovic judges that if we were to introduce 1,000 robots, we would not be able to cover those jobs which

people can hardly wait to leave and that this would not cause any major social upheavals or problems in the creation of jobs. That is, in this phase the number of workers would be reduced [sic], since the robots also need to be attended, so that there would be only a certain change in the makeup of personnel to the advantage of people with a higher level of specialized skill. Dr Smiljanic holds a similar opinion. He feels that we will not face social problems up to the end of the century on the basis of the realistically possible degree of robotization of our economy. This naturally does not mean that we should wait with our hands folded, but rather we should study this problem calmly and be ready when it has more profound consequences for the creation of jobs.

7045

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ECONOMY

YUGOSLAVIA

BELGRADE ENTERPRISE COOPERATION WITH KOSOVO ECONOMY

Pristina JEDINSTVO 23 Jun 86 p 3

[Article by Vukman Vidakovic: "Belgrade's Cooperation With Kosovo"]

[Text] Belgrade, 22 June--The disintegration of the flows that represented the dominant feature of the functioning of the Yugoslav economy for the past decade has not bypassed Belgrade's economic ties with Kosovo either. At a meeting of Belgrade communists, it was said that the pooling of labor and funds that Belgrade and Kosovo economic organizations are establishing on the basis of allocations to the Federation Fund for the Development of the Economically Underdeveloped Republics and the Autonomous Province of Kosovo at this time constitutes the framework for Belgrade's economic ties with Kosovo, but also for the possibilities of full intensification of this form. The possibilities for self-management integration are far from being exhausted. In the view of the Belgrade communists, the accompanying further affirmation of the pooling of labor and funds between the Belgrade and Kosovo economies during the upcoming period will be one of the main areas of their activity, with everything being directed toward reinforcing economic ties with Kosovo.

Concrete Programs

In any case, during the period from 1981 to 1985, organizations of associated labor from the developed republics and the province of Vojvodina concluded 707 self-management agreements on carrying out joint programs in Kosovo. The implementation of the programs has been completed for 307 of the agreements, the implementation of 221 agreements is under way, and the implementation of 79 agreements has not yet begun. During this period, organizations of associated labor in Serbia proper concluded 135 agreements with OOURs [basic organizations of associated labor] in the underdeveloped republics and provinces. Serbian organizations of associated labor concluded a total of 40 agreements with Kosovo organizations. On this basis, 11,706.2 million dinars were involved.

By the end of 1985, organizations of associated labor in Belgrade and Kosovo concluded 26 self-management agreements on carrying out the program for joint investments; resources from the Federation Fund earmarked for direct pooling were used to finance these. Half of this program has already been completed. Since all Yugoslav economic organizations concluded a total of 82 self-

management agreements, a third of this program was initiated and was carried out, or is being carried out, by the Belgrade economy.

With respect to the total resources that it has been possible to involve in direct pooling, the Belgrade economy used about 70 percent, i.e. 25 percent of all the funds allocated in Belgrade for more rapid development in Kosovo; this is one of the best results achieved during the past 5-year period. The unused portion of the funds for pooling in joint programs, however, showed that there were significant possibilities for increasing the volume of pooling. Most of the program that has been carried out has even yielded above-average results. To prove this, it is sufficient to mention the fact that it is due to this program that 1,787 workers, primarily young ones, have been employed, and that another 2,172 unemployed people will soon begin working.

### Examples of Cooperation

Otherwise, most of the joint programs of OOURs (organizations of associated labor) in Belgrade and Kosovo have been in the area of industry, specifically in metallurgy, machine-building, the production of electrical machinery and equipment, the lumber industry, the production of construction materials, the textile industry, clothing, printing, and the collection and processing of secondary raw materials (a total of 19 programs).

The experiences to date (not just those of Kosovo, but also of all the other economies) have shown that particularly good results are achieved in cases in which new installations are built as part of organizations from the economically developed areas.

### Concrete Support Needed

One illustrative example is the Children's Clothing Factory in Glogovac, which operates as a unit of associated labor within Kluz. Admittedly, in addition to the operation at the newly built installation, to a great extent efficient implementation of the investment program itself was achieved, from its drafting to the completion of construction. An example of efficient implementation of a joint program based on direct pooling is the Lesak Machine Parts Factory, for which Ivo Lola Ribar is responsible, and which operates as part of the latter.

In regard to the future draft plan, the total amount of funds that the economy of Serbia proper is to pool with the Kosovo economy in 1986 is 26,716.6 million dinars.

Concrete support for the implementation of the program is needed. For example, the Kirilo Savic Institute has 10 programs already prepared, each of which would employ 150-200 workers. Likewise, Navip has begun to draw up an agreement on direct pooling with Agrokosovo, in order to achieve new plantings of commercial grapes, although cooperation also existed previously. Inels has already planned and carried out preparations for the Brezovica winter tourist center at Sar-Planina. Geneks has constructed 13 programs that would directly employ 2,325 workers, and is prepared to invest 16.6 billion dinars.

In the field of employment as well, cooperation has been announced between the SIZ (self-management interest community) in Belgrade and similar institutions in Kosovo.

In Belgrade's future cooperation with Kosovo, particular attention will also be devoted to even higher development of the cooperation between health and scientific institutions, since it is felt that the results achieved to date in this area consist mostly of occasional contacts at the expert level. Similar cooperation is also taking place between Belgrade publications and JEDINSTVO, RILINDJA, and other publications in Kosovo, as well as republic and federal publications, BORBA, etc.

9909

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ECONOMY

YUGOSLAVIA

FARM COOPERATIVES TO INCREASE IN MACEDONIA

Belgrade PRIVREDNI PREGLED in Serbo-Croatian 4-5 Jul 86 p 5

[Unsigned article: "First Motif--Higher Yield"]

[Text] In recent years, a more dynamic development of farm cooperatives has been observed in Macedonia, after a period of stagnation and numerous dilemmas. With greater involvement by the republic's Cooperative Federation, and increased support from opstina and other interested factors, during the last three years over 60 farm cooperatives were formed, including close to 30 last year alone, so that now a total of 162 farm cooperatives are operating in the republic, along with 26 basic organizations of subcontractors, with which more than 115,000 agricultural producers cooperate on the basis of long-term or annual cooperation.

The plan for this medium-term period provides for the establishment of about 175 more cooperatives, as a result of assessments that with greater involvement by cooperatives it is possible to carry out socially organized agricultural production, on a broad level, since private farmers in this republic possess 75 percent of the total arable land, and more than 90 percent of the livestock, while they have a share of more than 52 percent in the production of wheat, 97 percent in the production of corn, and about 90 percent in the production of tobacco, rice, vegetables, and livestock products.

The Cooperative Federation of Macedonia emphasizes that all the material conditions exist for the development of cooperatives, but the issue of highly trained personnel has not been brought up, since during the last three decades about 5,000 engineer-agronomists have graduated from Skopje University.

In addition to many initiatives for the formation of farm cooperatives and basic organizations of subcontractors, discussions are under way concerning the use of new forms of association, as provided by the Law on the Association of Farmers. Particular attention will be devoted to the development of cooperatives in hilly and mountainous areas, in which only 25 cooperatives are now active. Otherwise, one cooperative in the republic includes an average of nine villages.

During the upcoming period, by organizing the large production potential

available to the private sector, primarily by reaching agreements through farm cooperatives, it is possible to achieve a considerable increase in the production of market surpluses of basic agricultural products, the yields of which are still below those possible. For example, the average wheat crop in the private sector has not exceeded 2.2 tons per hectare for more than a decade now. Yields are also poor for many other crops, although private farmers in the republic own more than 28,000 tractors, several hundred combines, and other equipment.

A separate task is expanding arable land, since the abandoned farmland covers more than 103,000 hectares. In recent years, 22 farm cooperatives, in spite of many difficulties, became capable of agricultural production on a total of 4,400 hectares.

9905

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POLITICS

INTERNATIONAL AFFAIRS

ITALIAN CLAIMS ABOUT VAMPIRES, HISTORY DENIED

Bucharest CONTEMPORANUL in Romanian No 23, 6 Jun 86 pp 14-15

[Letter by Stelian Streja: "In Transylvania, a Romanian Province, There Are No Vampires"]

[Text] In the Italian newspapers CORRIERE DELLA SERA and IL MESSAGGERO and in some supplements published by their editorial staffs, I have often read articles of unquestionable documentary value on domestic and foreign topics. Therefore, I was astonished when, in a pamphlet published by CORRIERE DELLA SERA and in an article in the newspaper IL MESSAGGERO, I came across false information about the geography and history of Romania.

While the absurd is asserted imaginatively, sometimes, in works of fiction and in the "seventh art," the introduction of untruths into publications of current information, in pursuit of the sensational, has serious consequences both for the authors and for the respective editorial staffs. To give just a couple examples, I recall that a journalist in the United States was stripped of the Pulitzer prize and a journalist in Italy was prohibited from further writing because of articles with untrue information and a well-known West German journalist went to jail for publishing the so-called Hitler's journal. Can the publication of untruths about our country, to which I will refer, by the editorial staffs of the above-mentioned Italian newspapers really be overlooked?

Here is what I am talking about. In 1985, in "Editoriale del CORRIERE DELLA SERA," a pamphlet titled "Il Libro Della Magia" appeared under the signature of one Antonino Anzaldi. Trying to show that "la magia e un'arte," the author writes down in alphabetical order certain words considered magic and some explanations of the methods and means that could be used to "fare un incantesimo, preparare un filtro d'amore, creare un talismano della fortuna." If the respective author believes that, through what is written in his pamphlet, he will find readers who, by means of certain magic amulets, charms, potions, or rites with bizarre words, will come to be loved more or will become happier, that is his concern, but we ask him not to mix among these things distorted data on the history and geography of Romania. Because he does this when he puts in the pamphlet, under the letter V (p 93), the word "vanpiro," explaining that "non alludiamo qui all'animale, al pipistrello, ma al conte Dracula, a Nosferatu e ad altre allegre figure che escono della loro

tema di famiglia per succhiare il sangue altrui e mantenere così una parvenza di vita e di giovinezza" (we are not referring here to an animal, to a bat, but to Count Dracula, to Nosferatu, and to other such figures who emerge from their family tomb to suck the blood of another in order to thus maintain an appearance of life and youth). And after the author advises his readers how to protect themselves from vampires, by using religious symbols or garlic, worn around the neck and put at the head of the bed, at the door, and at the window, he concludes his suggestions as follows: "A attenzione al viaggi in Transilvania, terra di vampiri per eccellenza" (and beware of traveling through Transylvania, the country of vampires par excellence).

It is a lot of nonsense to write that figures of "vampire people" emerge from tombs, although, back in the school classes in which zoology is taught it is learned that vampires are only bats which live in some countries in Latin America and which feed on blood from homiothermic (warmblooded) animals. By pointing out to the tourists who come to Romania that in Transylvania there are vampires "per eccellenza," the nonsense is taken further, there being used, indiscriminately, long-disputed images from Bram Stoker's book, which was also mentioned in those pages.

Going along the same line regarding "vampire people," an article with the title "I Vampiri Sono tra Noi, Uno su Duecentomila" ("The Vampires Are Among Us, 1 in 200,000") appeared under the signature of F. Riz. in the Italian newspaper IL MESSAGGERO of 23 August 1985 (!). To convince his readers that "vampire people" exist, the author of the respective article makes use of the "authority" of a certain Canadian professor, David Dolphin, who had written that such vampires are persons born with a certain "genetic disorder," who have a bestial appearance and roam only at night like vampire bats, "succhiando il sangue di altri uomini e donne" (sucking the blood from other men or women). It is also said that 25 "vampire people" had been discovered in our century alone but that, according to the Canadian professor, there may be 1 in 200,000 persons. Just a year ago (1984--our note), such a "vampire person" had been discovered--the author of the article writes--but that "terra fertile di questi principi delle tenebre sia la Transilvania, ovvero il triangolo tra Jugoslavia, Ungheria, Romania e un pezzo di Polonia..." (the fertile soil for these princes of darkness is Transylvania, that is, the triangle between Yugoslavia, Hungary, Romania, and a part of Poland). It is seen that this author of the sensational displays a lack of elementary knowledge of zoology concerning vampires, and it is seen that, by putting the Romanian province of Transylvania between Romania and a part of Poland, he is poor in history and geography. He has to learn that for thousands of years, ever since this Romanian land has been inhabited, not one "vampire person" has been found, unless we cite, figuratively, those who "sucked" the blood of the working people, and, to the best of my knowledge, no vampire bats have been found.

In the same article there is an attempt to show what the means, old and new, are with which it is possible to "combat" the "vampire people," and that an "antivampire festival" is organized annually in Padua, on which occasion lectures on vampires are given and certain "purifying" rites are performed. We thus learn that "saga dei vampiri" is performed in front of the audience at midnight under the dome of the cathedral in Padua, and young girls, attired

appropriately, serve to the participants "il menù di Dracula," which is a "cocktail di Sabba, una scodella con il sangue di maiale, oppure, il filetto di fanciulle alla tartara" (a Sabbath cocktail, a plate with pig's blood, or filet of young girl, tartare style). And so this author "mixes" Dracula into these mystical customs. Those who give such lectures should not confuse the history of Vlad Tepes with the ignorant fabrications of a later time.

The discredit goes, of course, to them and to the ignorance that they display. It would be good at least for these authors to learn that the tourists from Italy and other countries who have come to Romania and have followed Transylvanian routes have not come across vampires but have been welcomed everywhere with the proverbial Romanian hospitality and have become acquainted with unforgettable places and customs, in which our people's past of toil and struggle and the authentic folklore are revealed at every step.

12105

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POLITICS

GERMAN DEMOCRATIC REPUBLIC

SWEDISH DAILY QUESTIONS HUMAN RIGHTS PRACTICES

Stockholm DAGENS NYHETER in Swedish 25 Jun 86 p 2

[Article by Per Jonsson: "Honecker in Stockholm, Seeking His Own European Role"]

[Text] Today perhaps the most authoritative statesman in Eastern Europe will arrive in Sweden on the first official top-level visit ever by the GDR (not counting condolences at the funeral of Olof Palme).

Despite the doubly unique character of the visit, it is hardly in the interest of Sweden for Honecker to come here.

To be sure, as neighboring countries, Sweden and East Germany have many important practical problems to discuss: protection against pollution of the Baltic Sea, trade and industrial exchange, and the future handling of refugees in transit through the GDR to Sweden.

Such everyday questions are probably not best dealt with at the level of Erich Honecker and Prime Minister Ingvar Carlsson, however, although the opportunity may be taken to put one or more concrete cooperative agreements into print.

For his part, Ingvar Carlsson could take the opportunity to ask why the modern and apparently stable industrial state of East Germany still sees it necessary to keep at least 8,000 political dissidents behind bars.

The prime minister could also press Honecker on why ordinary GDR citizens such as Inge Pheil and Siegfried Spengler (now adopted by Amnesty International) have been condemned to years in prison for the "crime" of applying for permission to emigrate.

Olof Palme "forgot," publicly at least, to take up such cases of deprivation of freedom during his political pioneer journey to Stralsund 2 years ago.

Nevertheless, clear statements on internal East German excesses would be highly consistent with the Social Democratic tradition of leadership. One need remember only how the French President Mitterrand lectured his East European hosts in 1984 for their violations of human rights according to the Helsinki Accord. We might also remember Palme's own words spoken at the party congress of that same year.

"A dictatorship not only denies its citizens their fundamental human rights, but it also creates dangerous conflicts that can have implications far beyond the country's boundaries."

"The hope for peace and disarmament can never become reality until all people have achieved their liberation."

If any East European head of state can feel or understand this linkage between freedom and peace it should be Honecker.

After all, throughout the eighties the East German leader has utilized his authority at home to the maximum in an attempt to play the role of a European statesman.

"Responsibility for the peace and security of Europe rests, in particular, on the Germans--in the East and in the West." This has been Honecker's constant motto in his efforts to safeguard European security and East German freedom of action. He has also supported quite openly the right of "small and medium-sized European nations" to independence in their foreign policy in a climate of more and more severe superpower conflicts.

The new respect--and the positive economic special treatment--that the GDR has achieved, especially from West Germany, has had a political price for the leadership in East Berlin, however.

The massive popular protests in the West against a renewal of the nuclear arms race on European soil have had their counterparts, on a smaller scale, among East German church and peace organizations. In addition, East Berlin's own highly publicized "peace offensive" has made it almost impossible for the GDR to keep a lid on such genuine popular protests, which are also directed against the nuclear buildup of the Warsaw Pact.

It is almost impossible to appear as a believable upholder of detente outwardly while keeping the internal dictatorship intact. Honecker has already been confronted with this lesson, although he has not yet learned it fully.

A serious political problem for the East German is that the Soviet Union does not at all approve of the GDR's more intense dialogue with West Germany. Moscow seems to fear that all East German contact with the "revanchist" Christian Democrats in Bonn brings the danger of open "insubordination" toward the Warsaw Pact. Consequently, even to this day Honecker has not been given the green light by the Soviet Union for his often-postponed trip to the Federal Republic.

There are no such obstacles with regard to a trip to Sweden. Sweden is not a dangerous NATO power, but a small and unaligned country that, in addition, is ruled by Social Democrats, who are now the political power outside the Soviet bloc that is most highly esteemed by Moscow.

For Honecker, the visit to Sweden is a golden opportunity to demonstrate to Moscow that his speeches about the role of small and middle-sized nations in Europe are uncontroversial, from the standpoint of the alliance.

It is enough for us to wish Honecker a successful visit to Stockholm, if this will help him obtain a ticket to Bonn. For the citizens of the GDR, however, it is just as important that he be reminded that lasting peace and security in Europe are contingent on greater freedom in his homeland.

9336

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POLITICS

ROMANIA

CONTRIBUTION OF MILITARY DOCTORS TO ECONOMIC, SOCIAL LIFE

Bucharest REVISTA SANITARA MILITARA in Romanian No 1, Jan-Mar 86 pp 7-10

[Article by Medical Col Dr Mircea Diaconescu: "For an Ever More Active Participation of Military Doctors in the Country's Scientific, Economic and Social Life"]

[Text] The themes, ideas and guidelines of inestimable value contained in the grand speech presented by the secretary general of the party, the president of the Republic, our supreme commander to the conference-review of the basic command and party aktiv in the army concerning the main fields of the country's defense capabilities and the increase of the army's integration in the political, economic, cultural and social life of the nation also constitute a broad and mobilizing program of work and revolutionary struggle for military medical personnel for the purpose of the steadfast fulfillment of their tasks in the decisions of the 13th RCP Congress and of implementing the requirements of national military doctrine.

The objectives and tasks standing before the army during the current five year plan are clearly defined on scientific bases, and new guidelines, theses and ideas of exceptional theoretical and practical significance have been formulated which enrichen and develop national military doctrine and military science in accordance with the stage of development attained by our society and with the defining trends of contemporary international affairs.

In this context and on the basis of the experiences accumulated by military doctors in the field of social-scientific affairs, within the Union of Societies of Medical Science and the Society of Military Medicine and Pharmacology we see increased value in the exploration of new ways to involve all the personnel in military-medical units in bringing about the thesis of inestimable theoretical and practical value regarding the active participation of military personnel in all the country's political and social affairs. In this manner, they can contribute to the fulfillment of the tasks established by the 13th Party Congress referring to increasing the prophylactic measures to prevent those aspects which negatively influence public health and to ensuring the vigorous health of the population and increasing longevity and the span of active life.

We have rich experiences in this regard, as seen in the fact that in military-medical units there is a valuable scientific potential, university professors, lecturers and doctors of medical science, as well as a vast scientific and publishing effort by medical-military personnel discussed within the framework of

the Society of Military Medicine and Pharmacology, with a portion of these works being published in the specialized magazines that appeared in-country and abroad. Several encompassing problems are dealt with and discussed which go beyond the strict framework of the army, having scientific and practical value for protecting the health of the civilian population, such as: new dimensions in promoting health and increasing the longevity and span of active life for all the people - tasks stemming from the historic decisions of the 13th Party Congress; national military doctrine - a basic element in the direction of military-medical scientific research; the system of management of medical-health groups in the all people's war for the defense of the country; medical care for the troops who carry out combat in free zones; the manner of organization and tasks of military hospitals for intervention in the event of disasters and a large influx in injured persons; current problems in anesthesia and intensive care under wartime conditions, in light of national military doctrine; traumas in modern warfare; indirect radiobiological effects and the possibilities of relieving them; surgical treatment of chronic necrotic x-ray dermatitis; indications of temporal pediculate skin grafts in the immediate covering of orbital-palpebral tumoral injuries (in other words, an aspect of plastic surgery with applications in military campaigns); the results of clinical experiments with certain types of metallic splints in treating fractures, as well as a variety of medical devices to be used as prostheses for thoracic members; a portable kit for collecting food products for the purpose of conducting a microbiologic examination in field, and others.

Even some subjects which strictly deal with one branch of service or military specialty are of interest, with these having applications in fields outside of the army, such as, for example, considerations for medical care of mountain infantry troops under the conditions of an all people's war, etiopathogenesis and prophylaxis of pressure-related traumas for divers or certain considerations concerning the hyperbarometric physiology of divers' work at great depths.

The commanders, party organs and organizations in the military-medical units, offices of the Union of Societies of Medical Science and doctors in the commands and units have the task of developing the themes that have been raised and of broadening and diversifying the problem areas in a close association with the requirements raised by the worldwide development of military technology, weapons and means and methods of waging war.

Military-medical scientific research must be focused on a priority basis upon the solution of certain specific problems both during peacetime and during combat: providing medical protection for the troops and civilian population against the effects of weapons of mass destruction; elaborating new and quick methods for microbiologic and virusological diagnosis of especially dangerous infectious diseases; creating certain plans and products for curative and prophylactic treatments, medical kits and field-mobile laboratories; studying the iatrogenic effect of certain chemical agents with especially poisonous effects - organophosphoric and psychochemical substances - as well as the effects of nuclear weapons and establishing certain diagnosis methods, treatments, antidote medicines, individual and group protection, protection against radiation and rapid techniques for administering all of these.



Similarly, many military doctors have published numerous valuable monographs - cardiac insufficiencies, the aortic arterial system, young adult rheumatism, clinical gastroenterology - including some that were honored by the Academy of the Socialist Republic of Romania in recognition of their scientific value ("Shock," "Aspects of Emergency Thoracic-Abdominal Surgery," "Member Traumatism," "Arterial Hypertension" and so forth). Certain solutions must be studied and further researched concerning emergency medical care in accordance with the possible situations shown by the doctrinary theses referring to physiognomy of the war that would be waged by all the people in the defense of the country, as formulated in the masterly speech given by comrade Nicolae Ceausescu at the conference-review of the basic command and party aktiv in the army. Having a separate structure, one characterized by centralized and hierarchical leadership, discipline, equipment, training, alert capabilities and quick response, the army cooperates with civilian groups for the purpose of limiting human and material losses in the event of disasters. Regardless of the type of disaster - floods or earthquakes, airplane crashes or nuclear accidents - their effects can be limited and eliminated only through the joint actions of the military-medical units and the groups of the Ministry of Health. More specifically, this can be done through the participation of all types of specialized doctors, average health care personnel and students in medical school who, furthermore, must master the techniques of cardio-respiratory resuscitation, stopping hemorrhaging, immobilizing fractures and combating pain. Aspects of such medical concerns were the object of a scientific meeting concerning the "Combined Intervention of Military and Civilian Medical Groups in the Event of Disasters During Peacetime," organized by the Society of Military Medicine and Pharmacology under the aegis of the Union of Societies of Medical Science. This was an occasion for the cooperation of military and civilian doctors that was noted as a means for military doctors to participate in the scientific, economic and social life of the nation.

It is necessary to expand the practice of inviting to the monthly sessions of the sections and offices of the Society of Military Medicine and Pharmacology, and to the inter-regional meetings of the Society, civilian doctors and pharmacologists and persons in the fields of education and medical research and practice from every center of the country, continuing to ensure, at the same time, the participation - with reports - of military doctors and pharmacologists, especially young ones, at the various events of the societies of the Union of Societies of Medical Science.

The contribution of the military doctors and pharmacologists to the scientific, economic and social life of the country is also expressed along the lines of developing the microproduction of medicines so as to obtain certain specific products from medicinal plants and to better use certain domestic raw materials - reducing society's hard currency expenditures -, as well as by designing certain efficient medicines that will become part of the national pharmaceutical market (such as the anti-ulcer product "Gastrobent," the anti-scarring agent used for burns "Cicatrol," the injectable solution "Metronidazol" and others).

Another direction of action is the production of certain scientific films of a military-medical nature, but of a much larger interest in fields such as: ophthalmology, traumatology, cardio-vascular surgery, maxillo-facial surgery and so forth.

Important tasks along the lines of increasing the contribution of military medicine to the scientific, economic and social life of the country also go to military-medical education, which has the mission of high responsibility to train good military-medical specialists and ardent political activists.

Military doctors can make their increased contribution to the materialist-scientific education of the masses in the spirit of our party's concept about the world and life through speeches and conferences at army cultural centers, clubs, cultural centers, schools and enterprises, in articles in the local and central press, and in radio programs, and to participation in scientific groups and by other means. Similarly, we have resources for their participation in popularizing and explaining the RCP's views concerning the defense of the country and the national military doctrine among the ranks of reserve health-medical personnel and young people, as well as providing health education to certain categories of the population.

The participation of the military together with the workers in the country's economic and social development, representing one of the basic missions of our army in peacetime, gives the commanders and the party organs and organizations in the military-medical units the task of studying and finding - as the secretary general of the party, our supreme commander, directed us - even better forms of more active participation of military personnel in all political and social affairs, with the contribution of military doctors in medical science practice and affairs in our country constituting one of the many possible fields of action.

8724

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POLITICS

YUGOSLAVIA

WEST GERMAN COMMENT ON MISTAKEN POLICY IN KOSOVO

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 11 Jul 86 p 12

[Article datelined Belgrade, July, by Viktor Meier: "What Does the Yugoslav Regime Want in Kosovo? Hatred Between Serbs and Albanians Growing"]

[Text] Yugoslavia, which is officially vehemently opposed to racial segregation now has itself its small "apartheid." In the future no Albanians are supposed to be permitted to settle any longer in "ethnically homogeneous Serb villages" in Kosovo since the "Albanian irredentists," it is claimed, have made it their aim to break down this ethnic cohesiveness. This is only one of the proposed measures by which the Yugoslav state and party leadership these days hopes to gain control of the problem in Kosovo more than 5 years after the 1981 disturbances. No one knows as yet how these measures are to be incorporated in the constitution and legislation. The publications on this subject are few and the impression is gained that differences of opinion exist on advisability of the entire action.

Foreign observers, including diplomats, are worried over the new turn of the Kosovo question because it is apt to increase bitterness among the Albanians and to result in activities which include foreign countries. Kosovo's communist Albanian functionaries look apprehensive and feel that, as a result of the partial cancellation of the Kosovo region's autonomy, they would be pushed even more into a situation that would be difficult to master: on the one hand, they would be under the thumb of federal intervention and direct control of a pressing Serbian leadership, on the other hand under the also growing pressure of its own people, Kosovo's Albanian majority, who take a negative view of cooperation with the Serbian leadership, speak of "national betrayal," and deprive the functionaries of the political basis. It seems as if the recently elected young party leader of Kosovo, Azem Vlas, starts to get caught in the horns of this dilemma, especially since he has not yet had the opportunity to acquire the prestige that was held by his predecessor Khol Siroka, and particularly Fadil Hoxha the recognized leader of Kosovo's Albanian Communists since the war days, who has now also retired from active politics for reasons of age.

The new considerable intensification of the Kosovo problem corresponds to the state of mind prevailing in Serbia. In Belgrade it is hardly possible any longer to conduct a dispassionate conversation on the Kosovo question. Kosovo was the center of the Serb kingdom of the Middle Ages. For all Serbs it constitutes a trauma that obviously they can hardly cope with emotionally that Kosovo's

Serb population (and with it also the small Montenegrin minority combined today constitute perhaps about 11 percent of the total population) unstoppably moves from the region and leaves the field to the Albanian people perceived to be foreign. The Serbs, who had their national awakening in the 19th century, find it difficult to understand that the Albanians are now also seeking their national identity.

No one disputes that life in Kosovo has become difficult for many Serbs. There are strong indications that the buying up of Serb property is controlled and financially supported--by whom and how, is difficult to say. There are also cases of molestations, even assaults on Serbs, including cases of rapes. It is probably also true that problems of the Serbs frequently are treated negligently by the Kosovo authorities. These and other problems could probably have been settled in talks between the leaderships of Kosovo and the Republic of Serbia, of which Kosovo is a part. Instead a mass movement "spontaneously" arose among the Kosovo Serbs which indicated that fundamentally these individual questions were not an issue but that the foundations of coexistence of Serbs and Albanians were shattered.

On this occasion it was obviously demonstrated that the communist functionaries cannot be the people who can master national problems and be recognized by the people as representatives. That applies to both sides. The Kosovo problem will remain intractable without democracy and democratic representatives. Serbia's leadership and also the Serb press have used the "spontaneous" movement of the Kosovo Serbs to strengthen the political pressure on the Kosovo authorities. After the latest incident, Azem Vlasi, who had yielded to the pressure of Serbia and of the federation, in a violent speech spoke again of "Serbian nationalism."

Irrational elements are decisive in Yugoslavia as regards the entire Kosovo question. It starts with the accusations that the "irredentist agitation" comes from Albania, even though it has been repeatedly demonstrated, not least by returning of refugees from Kosovo, that Tirana is rather afraid of Kosovo Albanians who are removed from Tirana's own control and politically and ideologically have a largely quite different orientation. The Yugoslav regime has an almost neurotic fear of the "Kosovo Republika" slogan. Hundreds of policemen apparently have nothing also to do but to chase rascals in Kosovo who paint the slogan on streets and building walls. The penalties for "Albanian irredentists" are draconic and are in no relation to the punishment for similar crimes in other parts of the country. Albanian prisoners are systematically mistreated in the prisons. In Macedonia, the anti-Albanian psychosis is so severe that many Albanians emigrate from there to Kosovo.

That is only possible because the Yugoslav regime, for reasons of its internal condition, can hardly tackle the Kosovo problem rationally any longer. The regime also increasingly adopts the Serbian view in the federation even though that again produces corresponding reactions among the Albanians and further raises the level of hatred. You ask yourself: what is it that the Yugoslav regime wants to achieve in Kosovo in general. Much of the new measures now approved seems to be rash, almost desperate. What Party Chief Zarkovic now had to say to the party congress on the Kosovo question shows hardly any sympathy for the Albanians.

In the long run, Yugoslavia will hardly be able to afford to conduct the dialogue with almost 2 million of its citizens only with the police or even the military. The Kosovo Albanians do not want to get away from Yugoslavia; they do not regard the present Albania as a partner. The so-called national unity may be present among them as a vague dream, but it is not their real goal. Secret organizations in Kosovo which feel bound to the Tirana regime are time and again betrayed and discovered. The Kosovo Albanians want as much autonomy as possible, whereby the form is less important to them than the substance.

12356

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POLITICS

YUGOSLAVIA

PROBLEMS DISCUSSED IN POPULATION DEVELOPMENT

Sarajevo PREGLED in Serbo-Croatian Nov-Dec 85 pp 1183-1207

[Article by Dusan Breznik: "Problems in the Development of Yugoslavia's Population"]

[Excerpts] Birth rates were relatively high immediately after the war, which was the consequence of demographic compensation, which often occurs after a war (a rapid rise of the marriage rate, normalization of family life, the decision of spouses to have more children, which was not possible during the war, and so on). Following this compensation, which lasted a short time, there was a resumption of the earlier long-term tendency toward a drop in the birth rate, which was pronounced in regions with a high birth rate. Only for the population of Kosovo was the tendency for the drop in the birth rate very slow.

Mortality rates have been declining in all regions, but fastest in regions with high proportions of children and young people in the total population. The trends toward a drop in general mortality were halted in regions with higher proportions of the elderly in the total population. After the aging of the population in these regions, there is a slow growth of total mortality.

Natural population growth has been declining in all regions. It has increased only for the population of Kosovo, since the mortality rate was dropping faster than the birth rate. Although the differences in birth rates among the other regions have diminished greatly, the differences in rates of natural population growth are larger, since the regions which previously had a high birth rate have a lower total mortality because of the young age-specific composition of the population.

In view of the situation as presented and the current trends, the first significant problem that needs to be pointed out in Yugoslavia's demographic development has to do with the existence of large differences in the level of the fertility rate. On the one hand there is a major portion of the population whose fertility is inadequate for reproduction of the population, and on the other hand population with high fertility rates and progressive reproduction.

Table 1. Birth Rate, Mortality, and Natural Population Growth for the SFRY and the SR's and SAP's, 1981-1983, per 1,000 Inhabitants

<u>Republics and Provinces</u>	<u>Live Births</u>	<u>Deaths</u>	<u>Natural Population Growth</u>
SFRY	16.4	9.0	7.4
Bosnia-Herzegovina	16.9	6.4	10.5
Montenegro	17.2	6.3	10.9
Croatia	14.2	11.5	2.7
Macedonia	20.1	6.8	13.3
Slovenia	15.2	10.6	4.6
Serbia			
Total	16.6	9.6	7.0
Serbia proper	13.7	10.0	3.7
Kosovo	31.0	6.0	25.0
Vojvodina	12.9	11.6	1.3

A low level of fertility is achieved by birth control, which came about spontaneously in Yugoslavia during the demographic development in the present period. It can be said that over 80 percent of married couples in Yugoslavia plan the size of their family with contraception or abortion. It is evident from demographic surveys on family planning (this is indicated by the statistics on births and abortions) that birth control in Yugoslavia is practiced mostly with abortions rather than contraception (there is one birth for every abortion). The liberal legislation with respect to performance of abortions in medical institutions (especially for abortions within the first 10 weeks of pregnancy) has been generally accepted and has contributed greatly to eliminating the consequences of illegal abortions, which often had a fatal outcome. However, there is agreement--from the medical, general humanitarian, and also demographic viewpoints--that the use of contraception is a more appropriate method of birth control. The Constitution of the SFRY and the constitutions of the SR's and SAP's contain the right of the individual and married couples to have the number of children they wish, when they wish. Opportunities for exercising this right depend both on people's knowledge of birth control and also on socioeconomic and other conditions as to whether the parents can provide a healthy and happy childhood for the children they desire and then for their socialization in later life. Accordingly, people will be able to make free decisions on the number of children the more knowledge they have about human reproduction, but also if the general social and economic progress is suitable for the life of the family. Unemployment, especially of young people, housing problems, and other things certainly do not represent favorable conditions in this respect. Activities are needed with respect to population policy, social welfare policy, health policy, economic policy, and other policies that will operate in the direction of solving the problems that arise both in connection with very low and also excessively high birth rates.

Demographic surveys on family planning in Yugoslavia have shown that the population in regions with very low fertility desire a somewhat larger family and the population and regions with high fertility desire a somewhat smaller family. This finding in the survey indicates the possibilities that certain measures could help to reduce these regional differences.

We will briefly point out certain other specific problems related to the study of the fertility of the population. It is well known from research on marital sterility<sup>1</sup> that the number of marriages in which there are no live births increases with the age of the spouses at the time of their marriage. For example, if a woman is between the ages of 18 and 22 when she marries, only about 4 percent of the marriages fail to have live births. This percentage is higher than 10 if she was between the ages of 30 and 34 at the time of marriage. That is, the probability that conditions will occur (diseases, for example) which will result in sterility increases with age. Similar results may come from postponement of the first birth in the marriage, and then not only the first, but also the second, and so on. Then if the interval between the first and second births increases, there is also a likelihood that the second birth will not be able to occur or is consciously avoided, since the difference in the age of the children is too great in the opinion of the spouses, or the woman feels that she is "too old" to have a small child. These reasons have greater weight with populations that almost entirely accept birth control. But in populations with a very high fertility, the women are exhausted by frequent births, and this particularly happens when the living conditions are difficult. Then the woman's health is also threatened quite frequently.

As for mortality, it can be said of postwar development in Yugoslavia that very favorable trends have been manifested. The age-specific mortality of the population has been dropping rapidly, and the average length of life of new births has increased greatly.<sup>2</sup> In populations which previously had high mortality, average length of life of newborn infants has increased greatly; for example, the length of life of newborn male infants in Kosovo increased from 48.8 in the 1952-1954 period to 66.4 years in the period 1980-1981, which is even higher than the average length of life of males in Slovenia in the period 1980-1981. Regional differences with respect to the average length of life have almost disappeared in Yugoslavia. However, we must also point out certain other problems that crop up in Yugoslavia's demographic development in connection with mortality. As with all populations that have a low mortality rate, so with the population of Yugoslavia, the difference in mortality rate between men and women likewise, as is clearly evident from the figures in Table 2. A detailed analysis of changes in the age-specific male and female mortality rates shows that the mortality rate has stayed at the same level for males or has been dropping only slowly, while with females there has been a stable tendency toward a drop in the age-specific mortality rate. Then we need to point out that infant mortality in Yugoslavia is still high if we make comparisons to the populations which have very low infant mortality. In Yugoslavia today about 40 infants die per 1,000 live births, which is a high coefficient when we bear in mind that in certain countries of Europe it is 10 or slightly above 10 per mille. The relatively high infant mortality rate in Yugoslavia is above all the consequence of the high infant mortality rate in Kosovo, Macedonia (between 30 and 60 per mille) as well as in certain other smaller regions, although it should be borne in mind that even in these regions infant mortality has dropped greatly (from the previous rate of about 150 per mille to the present 30-60 per mille). In certain countries which have a very low mortality rate (northern and western European countries, Japan, and so on) there has been a significant drop of the mortality rate in the last decade for the older middle-aged group and elderly group. These changes,

it is judged, are a consequence of earlier detection of chronic illnesses and greater medical effectiveness in treating these diseases. This drop in mortality is related to greater resources for the health service. Among the other problems we should also refer to the large tribute which is paid because of accidents and probably also to consequences for the morbidity and mortality rates that occur because of environmental pollution.

## Migrations

It is true of Yugoslavia as a whole, of the SR's and SAP's, and especially of smaller areas (topstinas, cities, and other settlements) that the growth of population has been greatly influenced by the migrational component. It might be said in general that the smaller the population, the greater the influence the migrational component can have on population growth, and here we are thinking especially of cities and rural settlements. Table 3 shows the impact of the migrational component over the period 1948-1981 for the entire country and for the SR's and SAP's.<sup>3</sup>

Table 3. Net Migration Over the Period 1948-1981 for the SFRY, the SR's, and the SAP's (per 1,000 inhabitants on an annual basis)

Republics and Provinces	1945-1955	1955-1961	1961-1971	1971-1981
AYRY	-1.8	- 3.8	-1.1	-0.2
Bosnia-Serbojovina	-7.8	- 6.6	-6.1	-1.3
Montenegro	-0.6	- 7.1	-5.4	-3.3
Croatia	-2.2	- 3.4	0.0	-0.6
Macedonia	+0.3	-12.6	-2.3	+0.3
Slovenia	-2.9	- 2.8	+0.5	+2.7
Serbia				
Total	-1.1	- 1.0	+0.6	+1.1
Serbia proper	+0.1	- 1.3	+1.7	+2.2
Banat	-2.2	- 5.7	-2.8	-3.2
Vojvodina	-1.8	+ 2.1	0.0	+9.7

Source of data: Calculated on the basis of the published data of vital statistics and the census (federal statistical yearbooks and the publication *DEMOKRATIJA STATISTICA*).

Note: Internal and domestic migrations were taken into account. Migrations based on temporary employment abroad were not included, since the census included these people in the country's permanent population.

In all periods since the war Yugoslavia has had more emigrants than immigrants, and this trend was also present in the period between the two wars as it had been previously. Although during the last two periods (see Table 3) the negative rate of net migration has been declining, it should be borne in mind that the balance did not include temporary migrations of our citizens to work abroad. According to the figures of the 1981 Census, 632,000 of our citizens were employed abroad temporarily, and in addition they had another 250,000 members of their families with them. It is quite likely that a considerable

number of these people will not return to their homeland (people who have married someone of another nationality, young people who have completed their schooling abroad, and so on), which means that they pass from the status of a temporary migrant to the status of a permanent emigrant.

It is evident from the figures in Table 3 that the less developed regions of Yugoslavia (Bosnia-Herzegovina, Montenegro, and Kosovo) have had a negative net migration over the entire postwar period (these were mainly domestic migrations), and then that the other regions have had a positive balance in domestic migrations and a negative balance in external migrations, which in certain periods has yielded a negative result in the overall balance. It should be said of the period 1948-1953 that Slovenia and Croatia also had negative domestic migration. Macedonia's large negative net migration over the period 1953-1961 is owing to the emigration of members of the Turkish ethnic minority, which occurred on the basis of an agreement between Yugoslavia and Turkey.

Domestic migrations in Yugoslavia will be examined on the basis of the 1981 Census, and this will be done only from certain standpoints.

First we will indicate the general characteristics of migrations in Yugoslavia (Table 4).

Table 4. General Survey of Migration of Population for the SFRY and the SR's and SAP's; 1981 Population Census

Indicator	SFRY	Bosnia-Herzegovina	Montenegro	Croatia	Macedonia
Permanent population--total	22,424,711	4,124,136	584,310	4,601,469	1,909,136
Did not move	13,240,260	2,751,320	188,571	2,583,773	1,180,444
Did move	9,184,451	1,372,736	245,739	2,017,696	728,692
Distribution (total=100%)					
Did not move	59.0	66.7	57.9	56.1	61.8
Did move	41.0	33.3	42.1	43.9	38.2
Number of newcomers per 1,000 old settlers	695	499	726	781	631
Newly settled population--total	9,184,451	1,372,736	245,739	2,017,696	728,692
From other settlements in same opstina	3,212,634	604,912	109,059	601,187	322,811



Table 4 (continued)

<u>Indicator</u>	<u>SFRY</u>	<u>Bosnia- Hercegovina</u>	<u>Monte- negro</u>	<u>Croatia</u>	<u>Macedonia</u>
From an- other op- stina in same SR or SAP	3,994,540	609,533	88,155	997,043	299,043
From an- other SR or SAP	1,760,333	141,330	45,111	368,735	77,248
From abroad	122,116	3,780	2,193	23,952	24,273
Origin un- known	94,828	13,181	1,221	24,779	5,315
Breakdown (to- tal=100%)					
From other settle- ments in same op- stina	35.0	44.1	44.8	29.9	43.7
From an- other op- stina in same SR or SAP	43.5	44.4	45.9	49.4	40.5
From an- other SR or SAP	19.2	10.3	18.4	18.3	10.5
From abroad	1.3	0.3	0.9	1.2	3.3
Origin un- known	1.0	0.9	0.4	1.2	0.7
Emigrating population-- total	9,062,335	1,766,228	303,925	1,916,818	715,576
To another place in same op- stina	3,212,634	604,912	109,059	603,187	322,813
To another opstina in same SR or SAP	3,994,540	609,533	88,155	997,043	299,043
To another SR or SAP	1,760,333	538,602	105,499	921,809	88,405
Destination unknown	94,828	13,181	1,221	24,779	5,315

Table 4 (continued)

Indicator	SFRY	Bosnia- Hercegovina	Monte- negro	Croatia	Macedonia
Breakdown (total=100%)					
To another place in same opstina	35.4	34.2	35.9	31.5	45.1
To another opstina in same SR or SAP	44.1	34.5	29.0	52.0	41.8
To another SR or SAP	19.4	30.5	34.7	15.2	12.4
Destination unknown	1.0	0.7	0.4	1.3	0.7
Net migration balance for SR's and SAP's (newly settled population minus emigrating population)	0	-397,272	-60,379	+76,926	-11,157
Serbia					
	<u>Slovenia</u>	<u>Total</u>	<u>Serbia Proper</u>	<u>Kosovo</u>	<u>Vojvodina</u>
Permanent population--total	1,891,864	9,313,676	5,694,464	1,584,440	2,034,772
Did not move	998,317	5,387,635	3,113,507	1,110,227	1,163,901
Did move	893,547	3,926,041	2,580,957	474,213	870,871
Distribution (total=100%)					
Did not move	52.8	57.8	54.7	70.1	57.2
Did move	47.2	42.1	45.3	29.9	42.8
Number of newcomers per 1,000 old settlers	895	729	829	427	748
Newly settled population--total	893,547	3,926,041	2,580,957	474,213	870,871

Table 4 (continued)

Indicator	Slovenia	Serbia			
		Total	Serbia Proper	Kosovo	Vojvodina
From other settle-ments in same op-stina	360,932	1,211,731	819,335	240,511	151,885
From an-other op-stina in same SR or SAP	389,540	1,611,226	1,124,221	177,718	309,287
From an-other SR or SAP	111,905	1,016,004	583,036	50,517	382,451
From abroad	24,822	43,096	24,299	3,331	15,466
Origin un-known	6,348	43,984	30,066	2,136	11,782
Breakdown (total=100%)					
From other settle-ments in same op-stina	40.4	30.9	31.7	50.8	17.4
From an-other op-stina in same SR or SAP	43.6	41.0	43.6	37.5	35.5
From an-other SR or SAP	12.5	25.9	22.6	10.6	43.9
From abroad	2.8	1.1	0.9	0.7	1.8
Origin un-known	0.7	1.1	1.2	0.4	1.4
Emigrating population--total	814,390	3,545,398	2,264,692	586,337	693,369
To another place in same op-stina	360,932	1,211,731	819,335	240,511	151,885

Table 4 (continued)

Indicator	Slovenia	Serbia			
		Total	Serbia Proper	Kosovo	Vojvodina
To another opstina in same SR or SAP	389,540	1,611,226	1,124,221	177,718	309,287
To another SR or SAP	57,570	678,457	291,070	166,972	220,415
Destination unknown	6,348	43,984	30,066	2,136	11,782
Breakdown (total=100%)					
To another place in same opstina	44.3	34.2	36.2	40.9	21.9
To another opstina in same SR or SAP	47.8	45.4	49.6	30.3	44.6
To another SR or SAP	7.1	19.1	12.9	28.4	31.8
Destination unknown	0.8	1.2	1.3	0.4	1.7
Net migration balance for SR's and SAP's (newly settled population minus emigrating population)	+54,335	+337,547	+291,966	-116,455	+162,036

Source of data: SAOPSTENJE, Federal Bureau of Statistics, No 26, Belgrade, 1984.

Table 4 presents the figures on the general migrational characteristics of the Yugoslav population as of 31 March 1981 regardless of when that migration occurred. During the census every inhabitant was put the question of the last place of permanent residence before the current one, which means that persons who have been living since birth in the same place furnished information to the effect that they had never moved at any time in their lives. For persons who did move, figures are given in Table 4 as to the origin of the move, that is, where they moved from. For Yugoslavia as a whole the number of those

moving in and those moving out would be the same if there had been no immigrants from abroad. The corresponding information could not, of course, be obtained during the census on those who moved abroad permanently.

The percentage of people who moved is higher in the advanced regions and lower in the underdeveloped regions, which conforms to the theory which states that the geographic mobility of the population is higher in a more advanced economy.

Total local migrations (between settlements in the same opština) involved 3.2 million persons in Yugoslavia up to the moment of the census, which indicates the great importance of mobility relative to the central settlements in the opština, but the importance of migrations based on marriage as a part of local migrations should be borne in mind.

Migrations between opštinas in the same SR (SAP), taken for Yugoslavia as a whole, were still more significant than local moves. Four million Yugoslav inhabitants were involved in them. These moves indicate an intensive process of resettlement within SR's and SAP's which brought about large changes in the regional distribution of the population.

According to the data of the census taken 31 March 1981, there were 1.8 million inhabitants in Yugoslavia who were living in a different republic than where they were born (they had moved from another republic). Net migration of SR's (SAP's) shows that Bosnia-Hercegovina had 397,272 more of those who moved out than those who moved in, and the balance was also negative for Montenegro (-60,379) and Kosovo (-116,455), while the net balance was positive for Croatia (+76,926), Slovenia (+54,335), Serbia proper (+291,966), and Vojvodina (+162,036). In Macedonia the number of those moving in from other SR's and the number of those moving out to other SR's was almost the same (-11,167).

For the period 1971-1981 we will show the moves between republics and provinces in still more detail (Table 5).

The balance is given for the sake of illustration. In the last row of Table 5 figures are given on the difference between the number of those moving out of the SR's and SAP's and those moving in. Over the period 1971-1981 Serbia proper, Slovenia, Croatia, and Vojvodina had more people moving in, as indeed they did in the overall balance.

This article does not claim to present a full analysis of the data on migration according to the 1981 Census, but the figures in the tables above are presented so as to indicate the rate of the processes of migration in our country. When we look at the division of migrations by types (urban, mixed, and rural), we see the particular importance of rural-urban migrations and then city-city migrations, which have had a large role both in quantitative terms and also from many other standpoints, for example, with respect to the socioeconomic transformation of the composition of the total population, and then the regional distribution of the total population, and so on.

Now that the quantitative features of migrations have been pointed out, in our discussion below we will be indicating certain problems which have cropped up in connection with migrations.



One of them is the large concentration of population in the direction of the republic (provincial) center (capital) and toward certain other urban and economic centers whose economy has been developing rapidly. Although employment has risen rapidly in these centers, and there has been increased construction of housing and then of schools and other things (development of transportation, the trade sector, and so on), problems have arisen in them such as unemployment, the housing crisis, problems in supply, and it has become increasingly necessary to moderate the concentration of population in the direction of these centers.

Rural areas, especially those in the mountains and those which are more remote from cities, have been emptied, and the population of these regions has been dropping rapidly. As a matter of fact, the population has been aging rapidly. The impact of these processes on the economy (especially on farming) has been adverse, and the question has arisen of what measures should be taken to halt a further decline of the population in these areas. There is no doubt that many small settlements will not survive, but it is indispensable to stimulate development in some of them not only of farming, but also of other economic activities so as to prevent entire areas from being emptied. High unemployment is also occurring in the underdeveloped areas, since the population is turning toward nonfarm occupations, in which there is a shortage of jobs because of the low level of development of nonfarm activities.

#### Changes in Demographic Distributions

In this article we will merely point up certain demographic distributions or problems that have been arising in connection with them.

Under the impact of secular trends in the birth rate there were changes over the period 1921-1981 which are characterized by the drop in the share of young people and the increase in the share of other age categories in the total population (Table 6).

Table 6. Population of Yugoslavia and the SR's and SAP's With Respect to Large Age Groups (1921-1981) and Projections to the Year 2001

SR's and SAP's	Year	In Thousands	Distribution, %			Aging Index
			0-14	15-64	65 and over	
Yugoslavia	1921	12,545	34.5	60.2	5.3	0.13
	1953	16,891	30.5	63.6	5.3	0.19
	1981	22,425	24.6	66.3	9.1	0.31
	2001	25,855	21.6	65.8	12.6	0.58
Bosnia-Herzegovina	1921	1,890	39.1	57.4	3.3	0.08
	1953	2,847	37.4	59.3	3.3	0.09
	1981	4,124	27.6	66.3	6.1	0.22
	2001	4,687	22.3	67.8	9.9	0.44
Montenegro	1921	311	37.6	56.6	5.8	0.15
	1953	420	35.7	56.9	7.4	0.21
	1981	584	27.6	64.2	8.3	0.30
	2001	685	22.6	66.7	10.7	0.47

Table 6 (continued)

SR's and SAP's	Year	In Thousands	Distribution, %			Aging Index
			0-14	15-64	65 and Over	
Croatia	1921	3,427	32.5	62.2	5.3	0.16
	1953	3,936	27.1	65.9	7.0	0.25
	1981	4,601	21.1	67.4	11.5	0.55
	2001	4,868	20.0	65.5	14.6	0.73
Macedonia	1921	809	39.3	53.5	7.2	0.18
	1953	1,305	36.9	57.2	5.9	0.16
	1981	1,909	29.1	64.1	6.7	0.21
	2001	2,358	23.0	67.5	9.6	0.42
Slovenia	1921	1,288	31.5	62.0	6.6	0.21
	1953	1,504	27.7	64.8	7.5	0.27
	1981	1,892	23.0	65.9	11.1	0.48
	2001	2,091	20.3	66.6	13.1	0.65
Serbia, total	1921	4,819	34.2	60.4	5.4	0.16
	1953	6,979	28.6	65.3	6.1	0.21
	1981	9,314	24.1	66.4	9.4	0.39
	2001	10,566	22.0	64.5	13.5	0.61
Serbia proper	1921	2,843	34.3	60.6	5.1	0.15
	1953	4,464	27.6	66.6	5.8	0.21
	1981	5,694	20.8	69.1	10.1	0.49
	2001	6,068	18.0	65.7	16.3	0.91
Kosovo	1921	439	43.7	50.3	5.9	0.14
	1953	816	40.2	54.7	5.0	0.12
	1981	1,584	41.5	53.9	4.6	0.11
	2001	2,410	34.4	60.2	5.4	0.16
Vojvodina	1921	1,537	31.2	63.0	5.9	0.19
	1953	1,700	25.9	66.9	7.2	0.28
	1981	2,035	20.0	68.8	11.9	0.62
	2001	2,088	18.1	66.3	15.7	0.87

Source of data: V. Simeunovic, "The Age-Specific Composition of the Yugoslav Population," *STUDIJE I ANALIZE*, publication of the Federal Bureau of Statistics (for 1921 and 1953); for 1981 the definitive results of the 1981 Census, "Statistički godisnjak Jugoslavije" [Statistical Yearbook of Yugoslavia], Belgrade, 1983.

The projections for the year 2001 were taken from the documentation of the Center for Demographic Research. The projections were made by the analytical method on the basis of the age-specific composition of the population of Yugoslavia and the SR's and SAP's according to the 1981 Census, but also on the basis of hypotheses concerning the birth rate, death rate, and migrations over the coming period.

In our populations which had a low birth rate even earlier, the process of the aging of the population has been very intensive (Croatia, Slovenia, Serbia proper, and Vojvodina). Aging of the population is also taking place in

regions (Bosnia-Herzegovina, Montenegro, and Macedonia) which have had a rapid drop in the birth rate in the postwar period. The population of Kosovo, on the other hand, is still very young, and a gradual process of aging could come only after the year 2000.

Our assumption is that we cannot anticipate any very significant rise in the fertility rate in regions where it is now low over the coming period. The judgment is that efforts are needed, that is, measures of population policy, to maintain the present level of the fertility rate, which is to say that we should count on a further process of the aging of the population. Society and the economy should assume that the absolute number of the elderly (and also of their share in the total population) will increase rapidly, and this means that there will also be an increase in outlays for health care, social welfare services, and also pensions. Accordingly, we should assume an increase in appropriations from the national income for these purposes.<sup>4</sup>

The labor force participation rates<sup>5</sup> of the population in Yugoslavia vary greatly from region to region. In 1981 they ranged from 23.9 percent (Kosovo) to over 50 percent (Slovenia and Serbia proper). Labor force participation rates depend on many factors, the most important of which are the age-specific composition, the proportion of young people attending school, the economic composition of the population (participation rates are higher for the farm population), the pension system, the labor force participation rate of women and the level or pace of economic development. These factors operate in an interconnected way, and their impact varies from one period of time to another (Table 7).

The labor force participation rate is low for the population of Kosovo, which is above all the result of the age-specific composition, the ever larger proportion of young people attending school today (the figures for 1981 are being used), the low labor force participation rate of women, but also the low level of economic development.

In Slovenia the participation rates are very high, which is also related to the age-specific composition and then to the high labor force participation rate of women of working age. The labor force participation rate of women is almost the same as for men in all age groups. The very high increase in the percentage of persons with low income in the total population is a consequence of the almost complete coverage of the population with old-age insurance.

In Serbia proper the labor force participation rates are the highest. Aside from the age-specific composition, a significant influence is exerted by the economic composition of the population (the share of the farm population in the total population is still significant, the labor force participation rates are high for women and also for the elderly farm population, since it has not been covered by old-age insurance). Labor force participation rates are also high for the female nonfarm population, although [sic] higher than in Slovenia.

In the coming period the labor force will be growing more rapidly than the total population, since the labor force participation rates for women will be

rising everywhere, in view of the fact that young women are being trained in schools to perform a particular occupation. These trends have been manifested over the period 1971-1981 except in the population of Kosovo, where the influences of the age-specific composition and low labor force participation rate of women have been dominant.

According to the data of the 1981 census, over 12 percent (1,224,000) of the total available manpower in Yugoslavia (9,870,000) were not employed in the national economy (unemployed persons, persons employed abroad). The actual number of those who are not employed is higher than the figure given, since in the census a portion of the population registered as unemployed with employment security offices were declared as dependents. It is estimated that the number of such persons is about 400,000, which means that about 17 percent of the total labor supply has not been part of the national labor force. What is more, a considerable number of persons who are employed or who are self-employed are only partially employed (underemployed), which should also be borne in mind when we evaluate the involvement of manpower in the national economy.

Table 9. Distribution of the National Labor Force by Sectors of the Economy in 1981

Indicator	Yugo- slavia	Bosnia- Herce- govina	Monte- negro	Croatia	Mace- donia
Total, in thousands	8,780	1,375	173	1,842	675
Distribution, %					
Total	100.0	100.0	100.0	100.0	100.0
Industry and mining	25.2	26.2	22.0	26.1	23.7
Agriculture	29.6	25.3	16.8	23.0	33.6
Forestry	0.7	1.9	1.6	0.7	0.3
Water management	0.2	0.2	0.6	0.3	0.3
Construction	7.8	11.8	8.1	7.2	9.2
Transportation and communications	5.1	5.5	8.1	6.7	3.7
Trade sector	6.7	5.7	8.7	7.8	6.5
Hostelry and tourism	2.7	2.7	5.5	3.9	2.3
Crafts and trades	3.5	3.2	4.7	4.0	3.3
Housing and municipal services and utilities	1.3	1.5	1.8	1.6	1.1
Financial and other services	2.3	2.3	2.4	2.9	1.7
Education and culture	4.9	4.6	6.4	4.9	5.0
Health care and social welfare policy	3.7	3.0	4.0	4.4	3.4
Sociopolitical communities and organizations	4.6	4.1	7.5	5.0	4.4
Unknown	1.5	2.2	2.0	1.5	1.2

Table 9 (continued)

Indicator	Slo- venia	Serbia			Vojvo- dina
		Total	Serbia Proper	Kosovo	
Total, in thousands	888	3,776	2,665	305	806
Distribution, %					
Total	100.0	100.0	100.0	100.0	100.0
Industry and mining	37.0	21.9	21.0	20.7	25.6
Agriculture	13.7	28.1	41.2	28.5	31.6
Forestry	0.8	0.3	2.8	0.5	0.3
Water management	0.1	0.1	0.1	0.1	0.3
Construction	6.1	6.9	6.4	12.1	6.6
Transportation and communications	5.1	4.3	4.1	3.6	5.1
Trade sector	8.2	6.1	5.9	5.2	6.9
Hostelry and tourism	2.9	2.0	2.0	2.1	1.9
Crafts and trades	5.5	3.0	2.7	3.8	3.5
Housing and municipal services and utilities	1.3	1.0	1.1	1.0	1.0
Financial and other services	3.4	2.0	2.0	1.3	2.2
Education and culture	5.3	4.9	4.5	8.5	4.6
Health care and social welfare policy	5.3	3.3	3.3	2.9	3.6
Sociopolitical communities and organizations	4.5	4.6	4.4	5.2	4.8
Unknown	0.8	1.6	1.1	4.3	2.2

Source: "Statisticki godisnjak Jugoslavije 1984."

#### Demographic and Certain Other Aspects of Unemployment

The problem of unemployment in our country has been making itself felt more and more. It is a general problem, and only certain of its aspects will be taken up in this article.

The present growth rate of the total population in Yugoslavia is about 8 pro mille (0.8 percent), and the growth rate of the labor force over the period 1971-1981 was 10.5 pro mille (1.05 percent), which is considerably less than the growth of employment (for example, the labor force is a broader category, since the labor force includes not only persons who are employed, but also persons who are self-employed and then the unemployed). The question arises as to why this discrepancy occurs. A few explanations can be given to provide an answer to this question: the number of members of the labor force in other categories than employed persons has been dropping steadily, and then almost all the persons in the age group being added to the labor supply want to establish steady employment (above all in the socialized sector), the transfer from agriculture is still taking place, and in addition there is a high percentage of women of working age (and also without skills) who also are trying to become employed (these are mainly women in the category of dependents).



Taking Yugoslavia as a whole, in the coming period the demographic component should have an influence toward reducing pressure for creation of new jobs, since the age group of 20-year-olds (those joining the labor supply) will be more or less constant over the coming period (between 150,000 and 165,000 a year), and those leaving the labor supply (persons over age 60) will be on the rise. We should only bear in mind the fact that almost all persons in the entry group are oriented toward nonfarm occupations (and there is a high labor force participation rate for women), while in the group that is leaving the percentage of nonfarm manpower is lower, which means a lower simple reproduction of the employed portion of the labor force. The percentage of simple reproduction of the labor supply (employed segment) is today about 2.2, but it is expected to rise slowly because of the distribution of the employed segment of the labor force with respect to age and length of working life. The use of pensions as a solution for the problem of unemployment, which is often referred to, is not in line with the distribution of the labor force with respect to age, since only slightly over 80,000 employed persons are over age 60.

#### FOOTNOTES

1. D. Breznik, "Sterility of First Marriages," in a study of the Center for Demographic Research entitled "Fertilitet stanovništva Jugoslavije" [Birth Rate of the Yugoslav Population], Belgrade, 1970.
2. In the most highly developed countries the average length of life of newborn males has risen to between 72 and 74, while for females it is between 76 and 78. Results similar to those have been achieved in Yugoslavia only for the population of SR Montenegro. The average values for all developing countries are today between 55 and 59.
3. Net migration represents the difference between the number of those moving in and the number of those moving out. Table 3 gives annual rates of net migration, which represent the ratio between the absolute net migration (the number of people moving in minus the number of people moving out) and the total size of the population in the middle of the period of observation.
4. The demographic, economic, social welfare, and other consequences of the aging of the population have been analyzed in our own and the foreign literature: for example, in D. Breznik, "Demografija--metodi, modeli i analiza" [Demography--Methods, Models, and Analysis], Belgrade, Naučna knjiga, 1980; and then in "Seminaire sur les incidences d'une population stationnaire ou décroissante en Europe," Ordina Editions, Liege, 1978 (a seminar sponsored by the Council for Europe).
5. The total population is divided on the basis of economic activity into the following categories: 1) members of the labor force (the labor force or manpower), 2) persons who have personal income, 3) dependents.

The labor force (or manpower) includes all persons who perform some occupation (an occupation is the type of job the person performs in order to

make a living). In addition to that, persons who temporarily are not performing their occupation are included in the labor force, and this would refer to persons who are unemployed as well as certain other categories of persons who at the time of the survey were not performing their occupation temporarily for other reasons (persons who are ill, persons doing military service if they were members of the labor force before going into the armed forces, and so on).

Persons with personal income are persons who derive income on the basis of previous labor (old-age and disability pensions), on the basis of past activity (disabled veterans), labor or the activity of some other person (survivor pensions), and then persons receiving social welfare (welfare recipients), scholarships (if the scholarship is their principal source of income), or persons who have a personal income on the basis of property (rentiers). Persons supported by members of the labor force or persons with personal income fall in the category of the dependent population.

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SOCIOLOGY

CZECHOSLOVAKIA

# PRAGUE DEMANDS WESTERN CURRENCY FOR PRINTING BIBLES

Frankfurt/Main FRANKFURTER ALLGEMEINE in German 11 Jul 86 p 6

[Text] Frankfurt, 10 July--After many difficulties, the project of making a new edition of the Bible available to the Czech Catholics gradually appears to make progress. In the early seventies the Czech state authority in Prague authorized the Christian churches in Bohemia and Moravia to publish a new edition of the Bible; it was a multivolume ecumenical translation of the Holy Scriptures with Commentaries. Of this Bible, 160,000 copies were produced in Czechoslovakia. In the translation the World Federation of Bible Societies had helped with money, the Stuttgart Catholic Bible Works with literature.

But this edition was too expensively and too scientifically prepared to be suitable for wide dissemination among the believers. Thus at the beginning of the eighties the Archbishop of Prague, Cardinal Tomasek, tried to get a Bible edition more suitable for the Catholic faithful. The state church authority in Prague finally permitted the printing of 100,000 Bibles. The text was to be based on the Czech ecumenical translation; the Commentaries were to be omitted; to take their place, introductions to each of the Biblical books and explanatory footnotes were planned. Production of the approved 100,000 copies was to be paid for by church agencies in the West--that is what the Prague state authority demanded. The negotiations necessary for this purpose were conducted on the Western side by the "Stuttgart Catholic Bible Works," on the Czech side, in addition to a representative of Cardinal Tomasek, also a representative of the Czech "Caritas" took part, which gave it the semblance of a church undertaking but in truth was more of an economic undertaking guided by the state.

On the Western side there were misgivings. Thus it was proposed that the number of the new testaments should be greater, for the total edition of the Holy Scripture, a smaller edition would, however, suffice. But this objection was dropped because otherwise the Prague Archbishop would have had to conduct new difficult negotiations with the state concerning the entire Bible project with uncertain outcome and with the consequence of further delay.

The Prague government's financial ideas also met with objections: why is it that the paper of Czech production and the work of a Czech printshop be paid for with foreign currency exclusively? What was then involved was what should happen to the proceeds from the sale of the Bibles. The Stuttgart Catholic Bible Works asked that this money should be for the benefit of pastoral purposes

in Bohemia and Moravia. But the Czech "Caritas," to which the Prague regime has assigned printing and distribution of the Bibles, then announced that Cardinal Tomasek wants to renovate the priests house in Prague, which would then be also available for pastoral purposes, for example for spiritual exercises. Since the Stuttgart Catholic Bible Works did not want to place any obstacles in the Archbishop's way, it finally expressed its agreement in this regard.

However, it did not accept the plan of the Czech "Caritas" that it should pay for the production of an additional 50,000 Bibles for sale to Czech Catholics in Western countries. The objection of the Stuttgart Catholic Bible Works: there is no need for that because the Czechs living in Western countries have sufficient Bibles in their language. Obviously the Prague government wanted to assure itself in this manner of further foreign currency receipts.

According to reliable information, the printing work in Czechoslovakia is underway; in the West, a large part of the necessary money has been raised and transferred to Prague. If no obstacles are made there, the Czech Catholics this year can have an affordable Bible that meets their needs.

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